
Superfund



Superfund Revitalization: Measures Of Success



SUPERFUND REVITALIZATION: MEASURES OF SUCCESS

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

CHAPTER 1

INTRODUCTION	1
1.1 LIMITATIONS OF THE ANALYSIS	3
1.2 SCOPE OF THE REPORT	4
1.3 REPORT ORGANIZATION	5

CHAPTER 2

VALUING SUPERFUND CLEANUP	6
2.1 CONSTRUCTION COMPLETIONS	6
2.2 CHANGES IN PROPERTY VALUE	10

CHAPTER 3

ACCELERATING SUPERFUND RESPONSE	20
3.1 SACM INITIATIVES	20
3.2 PRESUMPTIVE REMEDIES	24
3.3 QUICK TURNAROUND METHOD (QTM) ANALYTICAL SERVICES	30
3.4 <i>DE MINIMIS</i> SETTLEMENTS	33

CHAPTER 4

COMMUNICATION INITIATIVES	37
4.1 COMMUNICATIONS WITH STATES	37
4.2 COMMUNICATION WITH THE PUBLIC	41
4.3 COMPENDIUM OF GOOD IDEAS	44
4.4 COMMUNICATIONS WITH THE PRIVATE SECTOR	44

CHAPTER 5

CONTRACT MANAGEMENT	46
5.1 REDUCTION IN PROGRAM MANAGEMENT COSTS	47
5.2 STREAMLINING THE AWARD FEE PROCESS	49
5.3 STRENGTHENING ARCS CONTRACT CONTROLS	51
5.4 INSTITUTION OF SENIOR MANAGEMENT ACCOUNTABILITY AND OVERSIGHT	53

EXECUTIVE SUMMARY

The Superfund program has undertaken thousands of response actions that have eliminated or reduced the threats of hazardous waste to human health and the environment. More than 2,900 hazardous waste sites have been successfully addressed under the Superfund removal program, eliminating leaking abandoned drums, stabilizing sites, and responding to emergency releases of hazardous substances. The program has played a leading role in developing and presenting courses in hazardous material response, training local HAZMAT teams as first responders, and generally providing an expertise and response capability that ensures rapid protection anywhere in the country for human health and the environment from releases of hazardous substances.

The site assessment program can point to 35,320 sites that have undergone preliminary assessments and 16,107 sites with completed site inspections. The remedial pipeline is full of hazardous waste sites at various stages of remediation. Over the past 12 years, EPA has evolved a process for addressing complex remedial challenges, while considering the concerns of the local community, the affected State, the responsible parties, and the environmental community.

In its site cleanup work, EPA has handled enough hazardous soil and solids to cover more than 680 football fields to a depth of 10 feet; handled more than four gallons of contaminated liquids for each man, woman, and child in the country; and treated more than 25 gallons of contaminated groundwater for each U.S. resident¹.

But there is always room for improvement. Actions to reduce risks can occur faster; decisions can be more equitable; contract management can be more efficient. On June 19, 1991, the EPA Administrator charged the Office of Solid Waste and Emergency Response (OSWER) with the task of addressing two fundamental questions: (1) What are EPA's options for accelerating the pace of cleanup at the nation's Superfund sites?, and (2) Does the Superfund program use realistic assumptions when evaluating and managing the risks at a Superfund site? The OSWER Deputy Assistant Administrator chaired a 30-day Task Force to address these issues. The 30-day Study produced a series of recommendations for improving the Superfund program. Many of these recommendations have been implemented, and there is a general feeling within the Superfund program that fundamental changes are occurring in how the program does business.

Concurrent with the 30-day Task Force, another group was examining the Alternative Remedial Contracts Strategy (ARCS) contracts. This group, the

¹ EPA Superfund Progress, Spring 1992, p.9.

Administrator's Task Force on ARCS, made 32 recommendations on how to improve the management of these contracts. Almost all of these recommendations have now been implemented.

On October 2, 1991, the Administrator announced a program to revitalize the Superfund program based on the recommendations of the 30-day Task Force and the ARCS Task Force. This revitalization effort focused on the streamlining of Superfund activities to ensure that risks are addressed quickly and effectively. Areas addressed by revitalization include completions, accelerated cleanups, contracts management and administration, and outreach to various Superfund stakeholders. This report summarizes the status of several of the initiatives undertaken as part of the revitalization effort, and to the extent possible, estimates the benefits that may be attributable to those initiatives.

CONSTRUCTION COMPLETIONS

By September 30, 1993, EPA had completed all construction activities at 217 NPL sites, and was well on its way to achieving its FY94 goal of 265 NPL sites with completed construction. Progress is being made, risks are being reduced, and Superfund monies and authorities are contributing significantly to the welfare of our nation.

A Superfund remediation generates benefits for individuals located on or near the contaminated site, and for society in general. The benefits may take the form of reduced health risks to individuals who live or work on or near the contaminated site, increased property values for owners of the site and for those owners whose properties are adjacent to or near the site. In addition, society in general benefits from a Superfund cleanup because persons living far from the site take pleasure in knowing that the site is not contaminated, and that drinking water is clean and safe wherever they may go.

About 35 percent of the sites with completed construction through FY92 have returned to some beneficial use, and more than two-thirds of the 35 percent are currently used in some commercial or industrial enterprise. Industrial operations include electronic components manufacturing, production of specialty chemicals, pesticide and fertilizer formulation, wood treating, and nail coating. Other light industrial operations include various types of manufacturing, metal working operations, a warehouse facility, and storage areas. Commercial operations include a restaurant, a commercial laundry, an auto repair garage, and a plant nursery.

Almost 12 percent of the 35 percent are being used or are in the planning stage, for recreational use. Residential use is occurring at two sites. Other beneficial uses include State and County Offices, airports, an active landfill, and grazing land for cattle. See Exhibit ES-1 for a full listing of beneficial uses by site and category. Exhibit ES-2 summarizes the current status of sites with construction completed by FY92. With construction at the site complete, many of the sites experienced some increases in

property value. A preliminary estimate of the change in property value is \$39 million, excluding the effect on adjacent and surrounding properties.

SACM INITIATIVES

The Superfund Accelerated Cleanup Model (SACM) approach to cleaning up hazardous waste sites was launched by EPA on March 1, 1992, with the publication of **SUPERFUND ACCELERATED CLEANUP MODEL (SACM!): THE NEW SUPERFUND PARADIGM**. The document acknowledged that although the program had evolved since the 1980 enactment of the Comprehensive Environmental Response, Compensation, and Liability Act, it often developed in response to conflicting expectations and mutually exclusive demands. The result was a patch-work of solutions that still left the program open to a multitude of critics who claimed, among other things, that the program was too slow or too costly. EPA believed that SACM would respond to these criticisms.

SACM combines Early Actions, such as removing hazardous wastes or contaminated materials, with on-going studies so that immediate public health and environmental threats are taken care of while long-term cleanups are being planned. Early actions may eliminate most of the risks posed to people by hazardous waste sites. While these actions are underway, a Regional Decision Team (RDT) of Superfund site managers, risk assessors, community relations coordinators, Regional counsel and other experts who monitor site studies to determine what additional short-term and/or long-term actions are required. Restoration of ground water is an example of long-term action.

During 1992 and in 1993, EPA initiated Regional pilots to demonstrate the implementation of SACM, as well as to document the benefits of SACM. EPA initiated 15 Regional pilots dealing with the acceleration of the Superfund cleanup process and enhancement of equity in the process. Now roughly half of these pilots are complete. Broad benefits seen from the pilots include the implementation of initiatives such as SACM, presumptive remedies, integrated (i.e., more efficient) assessments, and early actions.

On October 1, 1993, the Office Directors of the Office of Emergency and Remedial Response and the Office of Waste Programs Enforcement stated in a joint memorandum that a key priority for fiscal year 1994 will be moving SACM from a pilot approach to "business as usual." EPA regional offices are now working toward this end.

PRESUMPTIVE REMEDIES

Presumptive remedies are preferred technologies for common categories of sites, based on historical patterns of remedy selection and EPA's scientific and engineering evaluation of performance data on technology implementation. The objective of the

presumptive remedy initiative is to use the program's past experience to streamline site investigation and to speed up selection and implementation of cleanup actions. EPA has developed a series of directives on presumptive remedies for various types of sites. In particular, presumptive remedy directives have been developed, or are being developed, for the following site categories: municipal landfills, sites with soil contaminated with volatile organic chemicals (VOCs), wood treatment sites, coal tar sites, sites contaminated with PCBs, grain storage sites, and sites with groundwater contaminated .

Presumptive remedies draw upon past Superfund experience to streamline the response process, without discouraging the use of innovative technologies or non-standard approaches to sites with special characteristics. Instead of evaluating more than a dozen potential remedies at every site, two or three remedies are identified in a guidance document as having a high probability of success, based on EPA's historical experience. Based on the "presumption" that one of these remedies will prove to be ideal for a particular site, the data collection efforts and risk assessments can be better focused, and feasibility studies can be completed faster and at a lower cost. Further, Agency positions can be shared with other stakeholders at an early stage, thus reducing the likelihood that serious concerns about remedial action will not be raised at the last minute.

In developing presumptive remedy guidance, EPA has selected site categories whose contamination is usually addressed by a small number of remedies, and where there are a significant number of these types of sites that would benefit from standardized approaches. EPA has completed the first presumptive remedy guidances for VOCs in soil and municipal landfills. The other guidances are scheduled for completion in 1994. When the guidances are completed, EPA will conduct several demonstration projects per site category to help evaluate the overall benefits of these guidance to the Superfund program.

Potential Benefits of the Presumptive Remedy Initiative

Currently, EPA estimates that as many as 600 future and 600 current NPL sites may benefit from the use of presumptive remedies. The derivation of this estimate was based on the assumption that future NPL sites will have a similar profile to historical NPL sites.

In general, use of presumptive remedies is expected to result in cost and time savings during the remedial investigation and remedy selection stages of the response. Standardization of these processes through presumptive remedy guidance should also increase consistency in remedial investigations, feasibility studies, remedy selections, and remedial designs.

EPA estimates that response costs and time during the RI/FS stage of the response may be reduced between 8 and 16 percent under the presumptive remedy

initiative. Assuming that about 600 sites that are currently listed on the NPL could benefit from the use of presumptive remedies, and the savings could reach \$50,000 to \$125,000 per site during the RI/FS stage, the total savings could range from \$30 to \$750 million. It does not acknowledge any savings attributable to streamlined negotiations with responsible parties and the other stakeholders at the site about what to expect from the remediation. This estimate also does not account for cost savings from fewer decision errors and voluntary cleanups.

Early empirical evidence indicates that the presumptive remedy initiative may significantly reduce traditional response times. Preliminary information on the Region 6 pilots indicate that presumptive remedies were one factor that contributed to a 65 to 75 percent reduction in the duration of RI/FS activities. With additional savings due to shortening PRP negotiations for conducting the RA, Region 6 projects an overall time savings of about 60 to 65 percent, reducing the overall length of time to reach the RA stage from 8 to 3 years.

Preliminary information on a Region 1 municipal landfill presumptive remedy pilot also shows significant savings. By relying on historical groundwater data and basing its actions on the presumptive remedy for a municipal landfill (i.e., a cap), the completion of the RI/FS for the site is estimated to be completed in about two years vs. the normal period of 41 months, with construction of the cap to be completed in a little over two years after initiation of the remedial process. Traditionally, EPA has found that it takes 41 months from the completion of the Record of Decision (ROD) to completion of the remedial design and 55 months to complete the construction of the remedy for all types of sites.

QUICK TURNAROUND METHOD (QTM) ANALYTICAL SERVICES

In 1980, the same year that CERCLA was signed into law, EPA initiated the Contract Laboratory Program (CLP). This established on a competitive basis, a community of contract laboratories which were to provide large volume, standardized analyses in a cost-effective manner. As the Superfund program grew, the need for the analytical services provided through the CLP also grew. The capacity of the participating laboratories to analyze both organic and inorganic samples increased from about 5,000 samples annually to more than 78,000 samples annually in 1991.

During this period of explosive growth, problems were identified and attempts were made to resolve them. In March 1991, the Deputy Administrator requested the formation of a task force to review the CLP program. The task force reported that the most frequent complaint from regional officials involved excessive turn-around-times. The Regions reported that by the time the analytical results were reported by the laboratory, screened for contract compliance, reviewed and validated by the Region, and reported to the RPM, from three days to eight weeks or longer had passed.

The Quick Turnaround Method (QTM) analytical service was developed to provide a faster and more efficient process for analyzing chemical data at a site. There is a need to collect chemical samples at several stages in the Superfund response process. In some situations, the need to obtain the analytical results quickly is critical because the data are essential to decisions that have to be made quickly. The QTM analytical service offered through the CLP can be used to provide analytical data on 81 organic target compounds within 48 hours. The traditional time frames for confirmatory organic determinations under CLP are 14 days and 35 days.

QTM is designed to produce data of known and documented quality that can be used for screening, monitoring, and other hazardous waste site assessments. It provides rapid turnaround for samples of water, soil/sediment, and waste. QTM is most appropriate for use in situations where site contaminants are known or highly suspected from previous evaluations, and when analytical data are needed rapidly. Analytical results through QTM are much less expensive than traditional CLP data. As a result, the use of QTM in combination with CLP confirmatory analyses can be highly cost effective. Comparisons between QTM and CLP confirmatory results have shown the QTM data to be generally reliable.

QTM became broadly available in April 1992. Currently three laboratories are validated to provide QTM service through the CLP. Tentative long-term plans include expanding QTM to address metals.

Applications for QTM arise in site inspections, site characterization, treatability studies, engineering designs, and during actual response actions at a site. One particularly important QTM application is in site characterization. QTM can enhance site characterization efficiency and cost effectiveness by increasing the number of "hits" in the more rigorous "full organics" CLP analytical methods. By locating high concentration areas using QTM results, samples submitted for confirmatory CLP analysis can be selected carefully. For example, samples that will affect Hazard Ranking System (HRS) scores could be selected from a larger number of samples analyzed through the QTM service. Results obtained using QTM can be used to identify the specific locations/samples where confirmation analyses are needed. The per-sample cost for the confirmatory CLP analysis is around \$1,100, compared to around \$300 for the QTM. By combining QTM with the CLP's Routine Analytical Services for the confirmatory analyses, a savings of approximately \$150,000 to \$200,000 per site is feasible depending on the number of samples required for site characterization.

DE MINIMIS SETTLEMENTS

Small waste contributors often complain that they are not able to settle with EPA until late in the remedy process, and settlement is often dependent on volumetric information that is not comprehensive at many sites. Moreover, many small waste contributors, who often are small businesses, complain that they spend an inordinate

amount of time acquiring information about the Superfund process and understanding the terms of a proposed settlement.

Part of the Superfund revitalization effort has been to place greater emphasis on reaching equitable settlements with individual responsible parties as early in the process as possible. To this end, EPA has reemphasized the use of *de minimis* settlements. Section 122(g) of CERCLA allows the Agency to enter into *de minimis* settlements whenever practicable and in the public interest. Two groups of parties are eligible for these settlements: *de minimis* waste contributors and *de minimis* landowners. Under a *de minimis* waste contributor settlement, parties responsible for only small amounts of hazardous substances at a site can be released from further liability after paying an agreed amount to EPA. Most of the *de minimis* settlements to date have been with waste contributors.

Benefits of *De Minimis* Settlements

Early waste contributor *de minimis* settlements promote efficient case load management at sites where there are wastes from multiple generators. Eliminating *de minimis* parties early in the response process reduces the number of parties with which EPA and other PRPs must negotiate with for implementation of the selection of the site remedy. Early settlements may also provide the Agency with reimbursement of costs already incurred and may provide funds for future site cleanup. Collecting funds early in the response process benefits the Agency and all PRPs. Amounts received from *de minimis* settlements reduce the amount non-*de minimis* parties would be liable for and a portion of that payment may be placed in a trust fund to defray future PRP cleanup costs. The availability of funds may also facilitate a global settlement, thus expediting the cleanup process and benefiting all parties and the public.

EPA Region 3 recently completed a pilot at the Tonolli Corporation site that involved *de minimis* settlements. Tonolli operated a secondary lead smelter and battery recycling facility between August 1974 and January 1986. Batteries were stripped for lead content. Contaminants identified at the site included cadmium, chromium, copper, lead, and arsenic. EPA Region 3 estimates that the Agency's cost, including contractor and Agency staff time, for settlements with about 200 *de minimis* parties was \$825,000. Most of the expenditures involved review and compilation of the waste-in information. These efforts, however, have resulted in collection of more than \$3.06 million as of June 1, 1993. Further payments resulting from the settlements are expected. For this site, there were two groups of settlements. In the first group, 170 parties signed and 161 of these have paid. The total settlement was \$3,491,233. In the second group, 33 parties signed settlements totaling \$542,124.

Early settlements with *de minimis* parties will generally entail lower transaction costs for the settling parties compared to settlements that occur during the RD/RA stage of the response, because negotiations focus solely on the party's waste contributions and

payments, and not on the performance of work. Although *de minimis* settlements accomplished to date are considered costly to the Agency, the benefits to settling parties, including some reductions in transaction costs and increased equity in the Superfund program, may justify the expenditure. It is likely that the total benefits of *de minimis* settlements (both in terms of efficiency and equity) will continue to increase, particularly as the Agency becomes more proficient in doing *de minimis* settlements.

EPA issued guidelines for streamlining the *de minimis* settlement process on July 30, 1993. These guidelines establish the minimal level of information necessary before a Region can consider a *de minimis* settlement, provide a methodology to construct payment matrices in appropriate circumstances, and encourage Regions to take a more active role in facilitating the settlement. Regions are no longer required to complete a waste-in list prior to offering a *de minimis* settlement which should allow many more PRPs to qualify for *de minimis* settlements. To emphasize the Agency's commitment to these settlements, EPA has targeted 35 settlements for the 1994 fiscal year.

COMMUNICATIONS WITH STATES

States are facing many of the same challenges currently facing the Superfund program. The Federal and State governments are partners in meeting environmental challenges. To this end, EPA management and staff have met with State representatives on several different occasions this past year. Issues of discussion included the State role in Superfund revitalization and State experiences in enforcement and community relations, as well as technical issues (e.g., soil cleanup levels), program management issues (e.g., risk management and future land use), and procedural issues. These meetings have been both informative and extremely helpful.

Since April 1992, EPA has held seven State forums in cooperation with ASTSWMO to exchange information on Superfund management issues. Participants have included EPA headquarters and Regional staff, State agency representatives, Department of Energy staff, and staff from the Agency of Toxic Substances and Disease Registry (ATSDR). The topics covered were diverse and timely, including consideration of future land use, voluntary cleanups, clean-up standards, communications, and cost sharing. The format of these meetings included presentations, questions and answers, and open discussion on topics.

In addition to the EPA/State meetings, there have been other opportunities for EPA to interact with States, including meetings of the State/EPA Superfund Policy Forum. EPA is also working with ASTSWMO on the non-NPL Cleanups Study. This study will collect data on State non-NPL cleanups in order to get a complete picture of the national cleanup picture. To accomplish this, ASTSWMO sent out a survey form to all of the States and territories requesting data on all State non-NPL cleanups to compile a national data basis.

Benefits from Improved Communication

The purpose of the State/EPA meetings is to ensure that States have an opportunity to express their views and share their experiences with EPA. Through these meetings, States have an opportunity to share their successes and inform others facing similar challenges about lessons learned. Also, because States are co-implementers of Superfund with EPA, the forums provide the States with an important opportunity to become familiar with EPA policies regarding Superfund implementation.

States welcome the opportunity to share information with EPA. Through EPA/State interaction, States can alert EPA to concerns they may have with particular program management approaches.

The role that States have played in the Superfund response process has evolved over time; their role in site cleanups has increased as the Superfund program has developed. States and EPA have found that the hazardous waste cleanup universe is bigger than originally anticipated. Many States have developed site cleanup programs that complement the Federal Superfund program. Some States are developing their own funding schemes, liability approaches, and standards. At this juncture, involving the States in managing Superfund is most important to ensure national consistency.

COMMUNICATION WITH THE PUBLIC

EPA has held several meetings to solicit input from the public on how the Agency might improve the Superfund response process and communication with the public. The first of these meetings, held in June 1992, was in Washington, DC. Other meetings have been held in Chicago, San Francisco, and Dallas to facilitate participation by interested parties. The purpose of the public forums is to provide an opportunity for people with different perspectives to express their views. No effort is made to develop consensus or to prioritize concerns or solutions suggested during the meetings. However, after each meeting, EPA has developed a set of follow-up actions on major suggestions made by meeting participants.

Benefits of Public Communication

The meetings with the public have provided a mechanism for EPA outreach concerning Superfund. The meetings have provided an opportunity for diverse stakeholders to express their opinions. By participating in the discussions, public participants gain an understanding of the complexities of the issues facing the Superfund program. The meetings afford EPA an opportunity to gain a better appreciation for the concerns and motivations of the public on Superfund issues.

CONTRACTS MANAGEMENT

In the past two years, EPA has made significant strides in improving the contract management of its Alternative Remedial Contracting Strategy (ARCS) contracts. Four areas of success stand out:

- Reduction in Program Management Costs;
- Streamlining the Award Fee Process;
- Strengthening ARCS Contract Controls; and
- Increased Oversight and Senior Management Accountability.

EPA has succeeded in lowering its ARCS contractor program management costs from 20% of total contract costs to 12%. This reduction is due, in part, to the cost control mechanisms instituted as a result of the ARCS Task Force recommendations. EPA also took steps to streamline the Award Fee process through such changes as limiting contractor's self-evaluations and establishing thresholds for evaluating ARCS Work Assignments.

The ARCS Task Force made recommendations that reached beyond the ARCS contracts. One of these was a recommendation in the area of contract controls. The Task Force recommended that Independent Government Cost Estimates be performed for each new work assignment. The usage of estimates on all Superfund contracts is an effective tool for understanding and negotiating work assignment costs. Another area that has impacted Superfund contracts is the development of the ARCS Council and Regional Management Teams. Communications about effective contract controls and contract management vulnerabilities are expedited through the Council and the Teams. In addition, the Regional management teams serves as the forum for contract management improvements from the "front line", embodying the Total Quality Management approach to management.

Exhibit ES-1 . NPL Construction Completion Sites in Reuse by Category/Site Type

Location Category/Site Type	Number of Sites in Category	Number of Sites in Reuse	Types of Reuse
Urban Industrial	14	4	Manufacturing, commercial
Other Urban (Nonindustrial)	8	5	State office, active landfill
Suburban Industrial	9	7 *	Commercial, manufacturing, metal working, chemical research, warehouse, auto-garage
Suburban Hi-Tech Electronics Manufacturing	9	9	Electronics manufacturing
Suburban Residential Sites	5	4	Residential, plant nursery, park
Medium Town, Industrial	8	3 *	Manufacturing, commercial
Medium Town (Nonindustrial)	14	7	Commercial, manufacturing, sports facility, golf course
Medium Town Landfill	12	1	Park
Small Town	10	4	Metal coating, wood treatment
Rural Industrial	8	1	Manufacturing polyester resin
Other Rural (Nonindustrial)	22	6 *	Manufacturing, seasonal recreation area, future recreational lake, sand mining, private garage
Remote	5	1	Cattle grazing
Total	124	52	

* Includes one site where studies conducted after the NPL listing determined that no clean-up activities were necessary.

EXHIBIT ES-2
BENEFICIAL USES AT NPL CONSTRUCTION COMPLETION SITES

Category	Site Name, State	Current Owner and Land Use	Former Site Activities and Nature of Contamination
Urban Industrial	General Mills, MN	Multi-business technical center and research laboratories	same
Other Urban Sites	Chemical Metals Industries, MD	State of Maryland, Department of the Environment field office	metal recovery and laboratory
	Harris (Farley St.), TX	class 4 (non-hazardous) landfill	chemical disposal area
	Jibboom Junkyard, CA	owned by the State of California, uses under consideration: State offices, museum, or cloverleaf	metal salvage yard
Suburban Residential	Cooper Road, NJ	residential development	borrow pit; contamination from vials filled with an unknown substance
	Krysowaty Farm, NJ	plant nursery	illegal dumping off of a rural road
	Wide Beach, NY	residential community	residential community; contamination stemmed from cilling dusty roads with PCB-laced oil
	Lansdowne Radiation, PA	two family residence	radium processing in basement of home
Suburban Industrial	Matthew's Electroplating, VA	private use garage	electroplating operation
	Rose Park Sludge, UT	city park with playground and recreational fields	petroleum waste disposal
	Action Anodizing, NY	metal finishing	same
	BioClinical Labs, NY	various commercial and industrial operations	Industrial chemical warehouse
	Witco Chemical Corp., NJ	technical research facility for development of specialty chemicals	same; source of contamination was leaking septic system
	Wilson Concepts, FL	metal machining	metal finishing / manufacturing
	Onan / Medtronics, MN	commercial and manufacturing operations	wood treatment facility
	Firestone Tire, CA	warehouse facilities	tire manufacturing

Category	Site Name, State	Current Owner and Land Use	Former Site Activities and Nature of Contamination
Medium Town	Chisman Creek, VA	park facilities that include sporting fields and walking trails	local power plant fly ash disposal areas
	Luminous Products, GA	food chain restaurant	watch dial factory using radium
	Grand Traverse Overall Supply, MI	commercial laundering	same; groundwater and wells were contaminated by industrial seepage lagoon
	Gratiot Co. Golf Course, MI	county owned municipal golf course	burning and disposal of industrial waste that included DDT
	Nutting Truck and Caster, WI	woodworking business, food service operation, and County office space	disposal of foundry wastes
	Triangle Chemical, TX	small construction company	chemical company
	SOLA Optical, CA	optical lens manufacturing	same; contamination to the groundwater
Medium Town Industrial	Revere Textile, CT	owned by the Town; plans for a strip mall on the site	textile processing; contamination stems from dyes, paints and solvents
	New Castle Steel, DE	active office area and partially active dump	disposal of foundry wastes, including slag, coke, and metal scrap to areas near channel leading to the Delaware River
	Woodbury Chemical, FL	pesticide manufacturing	same; source of contamination stems from a surface pesticide release
	John Deere (Ottumwa), IA	active plant producing farm machinery, inactive dump	chemical disposal

Category	Site Name, State	Current Owner and Land Use	Former Site Activities and Nature of Contamination
Hi-Tech Electronics Manufacturing	Advanced Micro Devices (#915), CA	semiconductor manufacturing	same
	CTS Printex, CA	circuit board manufacturing	same
	Fairchild Semiconductor, CA	semiconductor manufacturing	same
	Intel Corp., CA	various chemical processing	same
	Intel Magnetics, CA	magnetic products testing	same
	Siemens Corp., CA	semiconductor manufacturing	same
	Spectra-Physics, CA	gas lasers and electronics manufacturing	same
	Synertek Inc., CA	electronics manufacturing	same
	Teledyne Semiconductor, CA	semiconductor manufacturing	same
Medium Town Landfill	Belvidere Municipal Landfill, IL	owned by a county conservation district inclusion in a park system	landfill that received municipal and industrial wastes and sludges
Small Town	Northern Engraving Co., WI	anodizing, chromate coating	production of metal nameplates and dials for the automotive industry
Rural	Mid-South Wood Products, AR	wood treatment of poles and posts	wood treatment
	Westline Site, PA	local restaurant/bar and seasonal recreational areas	lumber company conversion of wood into charcoal methanol, and acetic acid caused tar-like production wastes
	Independent Nail, SC	plating operation	paneling nail coating
	Metal Working Shop, MI	manufacturing operation	metal finishing
	Peterson Sand and Gravel, IL	sand mining; local conservation board acquired land and plans to use the site for recreational lake with nature trails	sand and gravel mining; contamination source was illegal dumping of paint and solvent wastes
	Big River Sand, KS	sand mining	same; illegal storage of paint wastes
Remote	Silver Mountain Mine, WA	cattle grazing	precious metal extraction operations

CHAPTER 1

INTRODUCTION

In response to such dramatic episodes as Love Canal, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). Its primary purpose was to establish a framework for responding to and remediating contamination caused by the release of hazardous substances, pollutants, and contaminants into the environment. CERCLA attempted to fashion a national hazardous waste response program after the highly successful hazardous substance and oil response program authorized under the Clean Water Act (CWA). This earlier response program was designed to enable the Federal government to respond effectively and efficiently to emergency releases of hazardous substances and oil into U.S. navigable waters. Responsibility for this early response program rested primarily with the U.S. Coast Guard and the U.S. Environmental Protection Agency (EPA), and roles and responsibilities were delineated in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP; 40 CFR Part 300). CERCLA directed the EPA Administrator to amend the NCP to reflect the response procedures, roles, and responsibilities of an expanded hazardous substance response program under CERCLA.

Pursuant to the provisions in CERCLA, Superfund responses were divided into two discrete groups: removal actions and remedial actions. The Superfund removal program had primary responsibility for responding quickly to releases of hazardous substances into all environmental media. The Superfund remedial program was designed to complement and parallel the already successful emergency response program. The remedial program was designed to address releases of hazardous substances, pollutants, and contaminants into all environmental media, and to address specifically the complex, *long-term* hazards to human health and the environment posed by sites with the worst contamination.

Although both the removal and remedial response programs provided for the responsible party to pay for the cleanup to the greatest extent possible, the remedial program was purposely designed to cautiously tackle difficult cleanup problems. Because the remedial response was likely to cost millions of dollars and involve many different responsible parties, the program evolved in such a manner to ensure that, whenever possible, the risks were properly characterized, responsibilities for response costs were appropriately assigned, and consensus on the remedy was reached between EPA, and the local community. Thus, the process was specified in such a way to facilitate and encourage State and local government, as well as community, participation in the remedy selection process.

In 1986, Congress enacted the Superfund Amendments and Reauthorization Act (SARA). SARA reauthorized CERCLA and increased the size of the Superfund to \$8.5 billion, a clear acknowledgement that the scope of the problem facing the Agency was much larger than originally anticipated. Today, more than 37,900 sites have been identified around the nation with hazardous waste contamination; more than 35,320 sites have undergone preliminary assessments and 16,107 sites have completed site inspections. Of these, nearly 1,300 sites have been listed on the National Priorities List (NPL), the Federal government's list of the "worst" sites in the nation.

However, not only was the number of hazardous waste sites significantly greater than first envisioned, the complexity and challenge of the cleanup had been grossly underestimated. Many of the contamination problems at these Superfund sites had never before been experienced. Sites were discovered with complex mixtures of hazardous substances that were reactive and were leaching into nearby surface water or groundwater. Drinking water supplies were contaminated, and potentially explosive situations existed. Conventional and well-tested control technologies often did not exist to address many of the problems found at these sites. Only now, after more than a decade of experience, is EPA able to generalize about likely remedies for different types of contamination problems.

Because of the size and complexity of the pollution problems at many abandoned hazardous waste sites, response under CERCLA's remedial program was generally long-term and expensive, and the need to ensure proper characterization of the risks and documentation of the expenditures tended to slow down the response process and increase the expense even more than would otherwise be the case. As a result, the public perception was that the Superfund response program was ineffective, inefficient, and inequitable.

Unfortunately, such a perception completely overlooks the fact that the Superfund program has successfully addressed more than 2,900 hazardous waste sites in the removal program, eliminating leaking abandoned drums, stabilizing sites, and responding to emergency releases of hazardous substances. The program has played a leading role in developing and presenting courses in hazardous material response, training local HAZMAT teams as first responders, and generally providing an expertise and response capability that ensures a basic level of protection for human health and the environment from releases of hazardous substances.

The site assessment program can point to 35,320 sites that have undergone preliminary assessments and 16,107 sites with completed site inspections. The remedial pipeline is full of hazardous waste sites at various stages of remediation. Over the past 12 years, EPA has evolved a process for addressing complex remedial challenges, while considering the concerns of the local community and the affected State, the responsible parties, and the environmental community.

In its site cleanup work, EPA has handled enough hazardous soil and solids to cover more than 680 football fields to a depth of 10 feet; handled more than four gallons of contaminated liquids for each man, woman, and child in the country; and treated more than 25 gallons of contaminated groundwater for each U.S. resident².

But there is room for improvement. Actions to reduce risks can occur faster; decisions can be more equitable; contract management can be more efficient. On June 19, 1991, the EPA Administrator charged the Office of Solid Waste and Emergency Response (OSWER) with the task of addressing two fundamental questions: (1) What are EPA's options for accelerating the pace of cleanup at the nation's Superfund sites?, and (2) Does the Superfund program use realistic assumptions when evaluating and managing the risks at a Superfund site? The OSWER Assistant Administrator chaired a 30-day Task Force to address these issues. The 30-day Study produced a series of recommendations for improving the Superfund program. Many of these recommendations have been implemented, at least on a pilot scale, and there is a general feeling within the Superfund program that fundamental changes are occurring in how the program does business.

Concurrent with the 30-day study, EPA was examining its management of the Alternative Remedial Contracting Strategy (ARCS) contracts. EPA's Administrator Reilly commissioned a study to look at the ARCS contracts after some negative publicity regarding the high costs associated with administration of the contracts. On October 2, 1991, the Administrator announced a program to revitalize the Superfund program. This revitalization encompassed the results of the 30-day study and the ARCS Task Force. The objective of the revitalization effort was to refocus and streamline activities to ensure that risks are addressed quickly and effectively. This revitalization effort addressed areas within the Superfund program that include site completions, accelerated cleanups, contracts management and administration, and risk assessment/risk management.

Some of the initiatives have been under development for a while, and the Administrator's announcement simply spurred on their implementation; others are a direct result of the intensive scrutiny to which the program has been subject. The success of the various initiatives is the subject of this report.

1.1 LIMITATIONS OF THE ANALYSIS

Our ability to accurately estimate the full effects of the revitalization initiatives is made more difficult by several significant factors. First, the Superfund program is dynamic, constantly responding to new information, learning from past mistakes and improving on past successes. In reality, there is no such thing as a static "snapshot" of

² EPA Superfund Progress, Spring 1992, p.9.

the way the program operated prior to October 1991; the program was very different in 1982, 1984, 1986, 1988, and 1990. Some of the differences are attributable to natural evolution of the program; other differences are attributed to the changing focus of EPA management (e.g., "enforcement first", "worst sites first").

Second, once a site is stabilized and immediate threats have been addressed, the nature and extent of contamination at a Superfund site must be fully evaluated. EPA and the public have climbed a steep learning curve; some of the benefits of past studies and evaluations are being reaped now. It may be that the spurt in construction completions is due to modifications of our targets and goals and some of the credit belongs to the renewed emphasis on completions. Also some credit may belong to the bulge in the remediation pipeline, reflecting the many years of background work, study, and site development efforts.

Third, some of the initiatives that evolved from the 30-day Study were under development, and their development was accelerated due to the revitalization effort. Other initiatives are newly developed and have been tested in the field for only a limited time, making an evaluation of their success problematic. Pilots have been initiated in different Regions to test different aspects of some of the innovations, and data from these pilots are critical input to this report, but each of the pilots has a uniqueness that makes generalization of results difficult.

1.2 SCOPE OF THE REPORT

There are three primary offices within OSWER currently responsible for implementing portions of CERCLA and the revitalization initiatives: the Office of Emergency and Remedial Response (OERR); the Office of Waste Programs Enforcement; and the Superfund Revitalization Office. In addition, the EPA Office of Enforcement (OE), the Office of Policy, Planning, and Evaluation, and the Office of Acquisition Management (OAM) have played critical roles in formulating and implementing the revitalization initiatives. Each of these offices has helped to identify, test, and implement certain aspects of the initiatives analyzed in this report. All three OSWER offices, OE, OPPE, and OAM are actively pursuing change and aggressively identifying ways of improving the effectiveness, efficiency, and perceived equity of the Superfund program. This report focuses primarily on four areas of change and renewed emphasis within the Superfund program: Construction Completions; Accelerated Cleanup; Contract Management; and Improved Information Exchange.

There are other initiatives, however, that are integral parts of the Superfund revitalization effort, but that are not addressed in this report because the initiatives are still under development or beyond the scope of this report. Nonetheless, these initiatives are believed to significantly contribute to the improvements in program management and implementation. Issues such as "how clean is clean?" are addressed at every site and have significant equity and efficiency implications. The selection of final

remediation levels at a site hinges directly on the assumptions made about future land use -- residential, industrial -- and site access. *How much importance should be placed on current land use or historical land use? How flexible should EPA be in establishing soil cleanup levels?* Local governments often have the best understanding of the value of specific parcels of land in a community, but they often do not have the advantage of a national perspective in selecting the optimal remedy for a local site.

1.3 REPORT ORGANIZATION

The remainder of the report is divided into four chapters, reflecting the major revitalization initiatives:

- o Chapter 2 describes the construction completion initiatives and its accomplishments to date. The chapter also presents results of a study of changes in property values attributable to Superfund response actions.
- o Chapter 3 discusses the Superfund program's efforts to accelerate cleanup and risk reduction, and estimates the cost and time savings that may be attributable to use of presumptive remedies, accelerated sampling data analysis methods, and *de minimis* settlements.
- o Chapter 4 describes the latest efforts by EPA to improve communication and information exchange among the stakeholders at Superfund sites, explaining why such initiatives are fundamental to the program's success.
- o Chapter 5 discusses improvements to the management of the ARCS program; the reduction of program management costs, the streamlining of the Award Fee process, the strengthening of ARCS contract controls and the increase in oversight and senior management accountability.

CHAPTER 2

BENEFITS OF SUPERFUND CLEANUP

Millions of dollars are being spent each year on Federal responses to releases of hazardous substances throughout the nation. This chapter attempts to measure how well EPA is accomplishing that goal in terms of reduced risk to the public and increased property values after a site has been cleaned up .

To date, Superfund monies and/or authority have been used to reduce or eliminate immediate threats to people and the environment at more than 2,500 sites around the nation; more than 500 of these "early actions" have occurred at NPL sites. Risks posed by exposure to hazardous waste have been reduced for more than 24 million people who live within four miles of these 500 NPL sites, including almost one million people who were at risk to threats posed by direct contact with hazardous waste.³

The remainder of this chapter describes EPA's success in accelerating cleanup at NPL sites throughout the nation, and estimates the benefits of those cleanups in terms of increased property value.

2.1 CONSTRUCTION COMPLETIONS

By September 30, 1993, EPA had completed all construction activities at 217 NPL sites, and is well on its way to achieving its FY94 goal of 265 NPL sites with completed construction. Progress is being made, risks are being reduced, and Superfund monies and authorities are contributing significantly to the welfare of our nation. Some examples of Superfund's contribution to our nation's welfare are presented below.

For at least one locale, there is a significant regional benefit from Superfund cleanup activities. There are 23 NPL sites in the South Bay area of San Francisco in Santa Clara County, California; all of these sites have contaminated groundwater. Twelve sites have remedial construction in place and operational, and are among the sites designated "construction complete." Six of these sites are grouped close enough together to cause a significant cumulative effect to the regional water supply.

Facilities at these six sites have used a variety of toxic chemicals to process semi-conductors, and other high-technology parts. Chlorinated organic solvents and other organic compounds are the primary cause of contamination in the soil and groundwater. The San Francisco Bay Regional Water Quality Control Board is overseeing the

³ "Superfund: Reporting on Cleanup Activities Through Environmental Indicators," FY91 Update, EPA 9200.5-07A, p.1.

groundwater cleanup. Both the EPA and the California Department of Health Services provide support to the Regional Board during the investigation and cleanup processes.

The sites are all located within the Santa Clara Valley Groundwater Basin, which provides up to 50 percent of the municipal drinking water for over 1.4 million residents of Santa Clara Valley. The general groundwater gradient within the county is northward toward San Francisco Bay. The proximity of tidally influenced streams and the bay punctuates the importance of the aquifer to the residents in the area as a source of drinking water.

Within a three mile radius of these groupings of sites, nearly 700,000 people rely on local drinking water sources. More than 89,000 housing units, valued at more than \$24 billion, are potentially affected by the remediation efforts. Although the affected population estimates presented above represent only those persons living within a three mile radius of the sites, the area potentially affected extends far beyond three miles. If left unabated, the cumulative effect of groundwater contamination over time in the South Bay area could render the aquifers unfit for use as a municipal water source. Extensive treatment of the water at great expense could become necessary prior to distribution. The added costs of water treatment in the area could have a substantial negative impact on the desirability of housing and on the value of real estate in the region.

A second set of examples that are useful to illustrate Superfund's contribution to our nation's welfare primarily focus on landfills and hazardous waste disposal sites that historically were located on floodplains close to a large river. Because current hazardous waste and water pollution regulations prohibit such sitings, many sites near major waterways have been abandoned and are now included on the Superfund NPL. By eliminating the contamination sources, cleanups at such sites benefit the immediate site vicinity, as well as downstream communities. If left unaddressed, the likelihood of far-reaching environmental damage is high. As a consequence of the proximity to a river system, contaminants may be carried downstream, leading to degradation of the riparian area ecologically, as well as economically. The value of the river to the downstream communities is enhanced considerably, and the likelihood that riverine biota and sensitive ecological habitat would be compromised is greatly reduced by Superfund actions. Some examples follow.

The FMC Corporation NPL site is located adjacent to the Mississippi River in Fridley, Minnesota. For 20 years, until the early 1970s, the company disposed of hazardous waste in an 11-acre unlined landfill at the site. Contaminated leachate from the disposal pits has seeped into the surficial and confined alluvial aquifers that discharge to the Mississippi River. The water supply intake for the city of Minneapolis is located 1,500 feet downstream from the FMC property. The remedial actions at the site, which include soil aeration and groundwater extraction, are protecting the Minneapolis drinking water intake. FMC's naval ordnance manufacturing complex continues

operation adjacent to the area where groundwater extraction is working to confine and eliminate the groundwater contamination.

The 6-acre Bruin Lagoon NPL Site in Pennsylvania, is located on Bear Creek, a tributary to the Allegheny River. Used for 40 years for disposal of refinery wastes, contamination from the site spread to the river periodically during flooding. The Allegheny River is an important water supply source for many industries and communities, including Pittsburgh. On at least one occasion, a fishkill resulting from the Bruin Lagoon contamination was seen 100 miles downstream. The cleanup has finally ended the environmental problems emanating from this site.

Trends in Beneficial Reuse

A Superfund remediation generates benefits for individuals located on or near the contaminated site, and for society in general. The benefits may take the form of reduced health risks to individuals who live or work on or near the contaminated site, increased property values for owners of the site and for those owners whose properties are adjacent to or near the site. In addition, society in general benefits from a Superfund cleanup because persons living far from the site take pleasure in knowing that the site is not contaminated, and that drinking water is clean and safe wherever they may go.

To appreciate some of the benefits generated by the Superfund remedial program, the 149 sites with construction completed as of September 30, 1992, were evaluated to determine whether the sites have been put to a beneficial use since the construction was completed. It is extremely difficult to put a dollar value on most of the benefits that are generated by a Superfund cleanup action. However, a discussion of post-remediation site activities may be helpful in providing a sense of the rejuvenation provided by the elimination or mitigation of the contamination at Superfund sites.

Many factors influence whether a site will be reused following hazardous waste remediation. The most important factor appears to be location of the property and the nature of the real estate market in the vicinity of the remediated property. Sites located in areas with many vacant lots and where the pace of real estate development is slow are less likely to be resold immediately after remediation as compared to sites in areas where prime lots are scarce.

Forty-five of the 149 sites with completed construction as of September 30, 1992, are located in remote or rural locations, or small towns. Twelve of these 45 sites are currently being put to a beneficial use, including sand mining, recreation, cattle grazing, and industrial uses Exhibit 1. The low population density surrounding remote, rural, and small-town sites, as well as the ready availability of land and a depressed rural economy, are likely factors influencing the low rate of reuse for these sites.

Twenty-two of the 149 sites are in urban locations. This group of sites includes 14 urban industrial sites. Four of the urban sites are currently being used constructively, and one of these is an industrial site. Several urban sites contain buildings with substantial assessed values, however, and constructive use in the near future is likely.

A total of 23 sites are located in suburban areas. Twenty of these sites are currently in use. The suburban sites are in Exhibit 1. Of the nine suburban industrial sites, all except two are in continued use or reuse. Nine suburban high-tech electronics manufacturing sites are all in continuing operation. Four out of five suburban residential area sites are in use.

Thirty-four of the 149 sites are located in medium-sized towns. These sites include eight industrial sites and 12 municipal landfills. One landfill is included in a park system and will be part of a recreational area. The remaining landfills are covered or capped and are currently unused. Reuse of municipal landfills is generally limited because of the high cost of building on such sites and the need for methane control. Ten other medium-town sites, including three industrial sites, are being used beneficially.

In summary, about 35 percent of the sites with completed construction in FY92 have returned to some beneficial use, and more than two-thirds of the 35 percent are currently used in some commercial or industrial enterprise. Industrial operations include electronic components manufacturing, production of specialty chemicals, pesticide and fertilizer formulation, wood treating, and nail coating. Other light industrial operations include various types of manufacturing, metal working operations, a warehouse facility, and storage areas. Commercial operations include a restaurant, a commercial laundry, an auto repair garage, and a plant nursery.

Almost 12 percent of the sites are being used or are in the planning stage, for recreational use. Residential use is occurring at two sites. Other beneficial uses include State and County Offices, airports, an active landfill, and grazing land for cattle. See Exhibit 1 for a full listing of beneficial uses by site and category.

Some communities surrounding Superfund sites where construction has been completed have benefitted significantly. One example is in Libertyville, Illinois, where a planning commission is in the final stages of transforming the Petersen Sand and Gravel Site, a former mining operation, into a recreational lake. Another example is in Belvedere, Michigan, where the Boone County Conservation District has acquired a covered and revegetated landfill for incorporation into its park system as a nature trail.

Approximately 15 sites have been sold since remedial construction has been completed. New businesses have entered the remediated site with the foreknowledge of its limitations and have tailored their practices to suit the temporary constraints at the site. Review of the 149 sites with construction completed shows that industrial/manufacturing sites were more likely to be sold and reused in the private

sector than other types of sites. In some cases, there are high value, on-site structures that can operate while remedial actions occur, especially if the remediation is addressing only the contaminated groundwater at the site.

2.2 CHANGES IN PROPERTY VALUE

When it is discovered that a property has become contaminated with hazardous substances, its value often plummets. This market response primarily reflects the fact that most people do not want to live on or near a contaminated Superfund site. Generally, people are concerned about the health risks posed by hazardous substances at the site, and are unwilling to risk living or working near those substances without some compensation. Although some people will accept the risk voluntarily, they usually demand compensation in the form of higher wages or, in the case of contaminated residential property, lower prices. Once the cleanup is complete and the risks have been eliminated, property values should be restored to their former levels.

Thus, at least theoretically, one should be able to analyze changes in property value before and after a Superfund response, and directly measure some of the benefits attributable to the cleanup action. The increase in property value after cleanup should represent some of the value added by the Superfund response. The price elasticity of the real estate market in the short run may be low, however, depending on the health of the surrounding real estate market and the economy in general. In addition, many factors other than site remediation affect the recovery speed for property values (e.g., prevailing interest rates). To properly analyze the changes in property value attributable to a Superfund response, therefore, one must isolate these other factors from the effect of the remediation.

NPL Property Value Changes

To effectively isolate the effect on property values attributable to Superfund remediation, it would be useful to perform time series analyses (i.e., analyses of changes in property value over time), isolating the effects of individual property characteristics, interest rates, and the general health of the real estate market, from the level and nature of contamination at the site. To perform such an analysis on the 149 Superfund sites with completed construction, however, would require extensive amounts of data on property values prior to remediation and data on similar sites with no contamination at all. Such an analysis was beyond the scope of this report.

To provide some insight into the change in the value of property after Superfund remediation, EPA reviewed the current land use at 124 sites on the NPL

EXHIBIT 1
BENEFICIAL USES AT NPL CONSTRUCTION COMPLETION SITES

Category	Site Name, State	Current Owner and Land Use	Former Site Activities and Nature of Contamination
Urban Industrial	General Mills, MN	Multi-business technical center and research laboratories	same
Other Urban Sites	Chemical Metals Industries, MD	State of Maryland, Department of the Environment field office	metal recovery and laboratory
	Harris (Farley St.), TX	class 4 (non-hazardous) landfill	chemical disposal area
	Jibboom Junkyard, CA	owned by the State of California, uses under consideration: State offices, museum, or cloverleaf	metal salvage yard
Suburban Residential	Cooper Road, NJ	residential development	borrow pit; contamination from vials filled with an unknown substance
	Krysowaty Farm, NJ	plant nursery	illegal dumping off of a rural road
	Wide Beach, NY	residential community	residential community; contamination stemmed from oiling dusty roads with PCB-laced oil
	Lansdowne Radiation, PA	two family residence	radium processing in basement of home
	Matthew's Electroplating, VA	private use garage	electroplating operation
Suburban Industrial	Rose Park Sludge, UT	city park with playground and recreational fields	petroleum waste disposal
	Action Anodizing, NY	metal finishing	same
	BioClinical Labs, NY	various commercial and industrial operations	Industrial chemical warehouse
	Witco Chemical Corp., NJ	technical research facility for development of specialty chemicals	same; source of contamination was leaking septic system
	Wilson Concepts, FL	metal machining	metal finishing / manufacturing
	Onan / Medtronics, MN	commercial and manufacturing operations	wood treatment facility
	Firestone Tire, CA	warehouse facilities	tire manufacturing

EXHIBIT 1 (Continued)
BENEFICIAL USES AT NPL CONSTRUCTION COMPLETION SITES

Category	Site Name, State	Current Owner and Land Use	Former Site Activities and Nature of Contamination
Medium Town	Chisman Creek, VA	park facilities that include sporting fields and walking trails	local power plant fly ash disposal areas
	Luminous Products, GA	food chain restaurant	watch dial factory using radium
	Grand Traverse Overall Supply, MI	commercial laundering	same; groundwater and wells were contaminated by industrial seepage lagoon
	Gratiot Co. Golf Course, MI	county owned municipal golf course	burning and disposal of industrial waste that included DDT
	Nutting Truck and Caster, WI	woodworking business, food service operation, and County office space	disposal of foundry wastes
	Triangle Chemical, TX	small construction company	chemical company
Medium Town Industrial	SOLA Optical, CA	optical lens manufacturing	same; contamination to the groundwater
	Revere Textile, CT	owned by the Town; plans for a strip mall on the site	textile processing; contamination stems from dyes, paints and solvents
	New Castle Steel, DE	active office area and partially active dump	disposal of foundry wastes, including slag, coke, and metal scrap to areas near channel leading to the Delaware River
	Woodbury Chemical, FL	pesticide manufacturing	same; source of contamination stems from a surface pesticide release
	John Deere (Ottumwa), IA	active plant producing farm machinery, inactive dump	chemical disposal

EXHIBIT 1 (Continued)
BENEFICIAL USES AT NPL CONSTRUCTION COMPLETION SITES

Category	Site Name, State	Current Owner and Land Use	Former Site Activities and Nature of Contamination
Hi-Tech Electronics Manufacturing	Advanced Micro Devices (#915), CA	semiconductor manufacturing	same
	CTS Printex, CA	circuit board manufacturing	same
	Fairchild Semiconductor, CA	semiconductor manufacturing	same
	Intel Corp., CA	various chemical processing	same
	Intel Magnetics, CA	magnetic products testing	same
	Siemens Corp., CA	semiconductor manufacturing	same
	Spectra-Physics, CA	gas lasers and electronics manufacturing	same
	Synertek Inc., CA	electronics manufacturing	same
	Teledyne Semiconductor, CA	semiconductor manufacturing	same
Medium Town Landfill	Belvidere Municipal Landfill, IL	owned by a county conservation district inclusion in a park system	landfill that received municipal and industrial wastes and sludges
Small Town	Northern Engraving Co., WI	anodizing, chromate coating	production of metal nameplates and dials for the automotive industry
	Mid-South Wood Products, AR	wood treatment of poles and posts	wood treatment
Rural	Westline Site, PA	local restaurant/bar and seasonal recreational areas	lumber company conversion of wood into charcoal methanol, and acetic acid caused tar-like production wastes
	Independent Nail, SC	plating operation	paneling nail coating
	Metal Working Shop, MI	manufacturing operation	metal finishing
	Peterson Sand and Gravel, IL	sand mining; local conservation board acquired land and plans to use the site for recreational lake with nature trails	sand and gravel mining; contamination source was illegal dumping of paint and solvent wastes
Remote	Big River Sand, KS	sand mining	same; illegal storage of paint wastes
	Silver Mountain Mine, WA	cattle grazing	precious metal extraction operations

EXHIBIT 1 (Continued)
BENEFICIAL USES AT NPL CONSTRUCTION COMPLETION SITES

- 1 . Source: Feasibility Study Report: Saunders Supply Company. U.S. EPA. Region 3. Philadelphia, PA. 1991.**

where construction was completed on or before September 1992, and estimated the change in property values.⁴

The current (cleaned-up) market values for the sites of interest were estimated based on local property tax assessment records and sales transactions data where available. Data were obtained for 95 of the 143 sites. For those sites where property values were unavailable, estimates were derived by extrapolating information from those sites with available data. The extrapolation was performed by grouping the sites into 12 site location categories (e.g., suburban industrial), and assuming that the median per acre values for sites with property value data were applicable to the sites without data.

This analysis should be viewed simply as an indication of the positive effects a Superfund response action can have on property values and the tax base of a community. It is not based on econometric analyses, which would isolate the effects of the Superfund response actions from other variables that effect the price of real estate. For example, no attempt was made to adjust the estimates for market trends and the effects of a recession on property values. Thus, although property values may be seen to rise when the Superfund response was completed, the market value may be artificially depressed and the effect of the Superfund response may be underestimated accordingly. Similarly, properties were not grouped by number of bathrooms, lot size, or age of the house, even though these factors significantly effect property values. These influences are too specific to each geographic location and were beyond the scope of this analysis. *Exhibit 2* presents the result of the analysis, showing the value of the 124 NPL sites before and after remedial construction was complete. As shown in the exhibit, the site category that experienced the largest change in property values is the suburban industrial category (total: \$12.9 million for nine sites with a median per acre value of more than \$267,000). The urban category also experienced significant changes in property value (total: \$10.4 million for 8 sites with a median per acre value of more than \$100,000). The estimated cumulative change in onsite property values is \$39.6 million, with an average positive change of \$7,770 per acre for all site categories.

The changes in onsite property values presented above are likely to be significant underestimates of the total increases in property value. Several factors lead to this conclusion. First, it is likely that the property values have not fully recovered since the Superfund response actions are relatively recent. Second, the nation in general is

⁴ The universe of sites reviewed for the study included the 149 NPL sites with completed construction as of September 1992. Four of the original 149 sites were excluded from the study because they were outside the continental United States; two additional sites were excluded because the sites were referred to another response authority and thus construction activities at the sites are still ongoing. Twelve sites were not included in the study because they include negligible land area. Six other sites were not included because the area of cleanup is a waterway or roadside. One site not included is a Federal facility.

EXHIBIT 2

ESTIMATES OF INCREASED PROPERTY VALUES ATTRIBUTABLE TO SUPERFUND

	Total number of sites	Number of sites with value information	Estimated Total Value With Cleanup (\$millions)	Estimated Total Value W/O Cleanup (\$millions)	Estimated Total Change in Site Value (\$millions)
Urban					
industrial	14	14	\$10.1	\$2.0	\$8.1
airport, landfill, etc.	8	8	\$12.6	\$2.7	\$9.9
Suburban					
industrial	10	10	\$57.3	\$43.6	\$13.7
residential area	8	7	\$1.6	\$0 ²	\$1.6
Medium Town					
general	14	14	\$12.7	\$0.3	\$12.3
industrial	9	9	\$15.0	\$10.9	\$4.2
landfill	12	12	\$1.9	\$0 ¹	\$1.9
Small Town	9	9	\$1.5	\$1.1	\$0.5
Rural					
general	23	21	\$1.7	\$1.0	\$0.7
industrial	8	8	\$10.3	\$9.5	\$0.8
Remote	5	5	\$0.7	\$0 ²	\$0.7
Hi-Tech Electronics Manufacturer					
	10	10	\$57.8	\$57.8	\$0 ³
No Land	11	N/A	N/A	N/A	N/A
Miscellaneous	4	0	N/A	N/A	N/A
Total	143	125	\$183.2	\$128.9	\$54.4

¹ All figures rounded to nearest \$100,000. Three sites had poorly defined boundaries and are not included.

² Value indicates that sites are considered entirely unusable without cleanup action

³ Value denotes that the presence of contamination did not affect site productivity.

suffering through an economic downturn and real estate in particular has been significantly depressed. Finally, and perhaps most importantly, limited data were available on the value of the properties today had remediation not occurred at the site. Because many of the sites were contaminated in only isolated areas, the analysis assumed that the value of the contaminated area today would be zero for that portion of the site that was contaminated; the remaining portions of the site were valued at full market value. Thus, if one-fifth of the site was contaminated and four-fifths were not contaminated, the analysis assumed that the value of four-fifths of the property at the site was not affected by the response action. This is unlikely to be the case, because properties in proximity are also negatively effected by noxious site characteristics.

Adjacent Properties

The economic literature includes several studies that estimate the effects of noxious properties on the value of surrounding residential properties⁵. These studies have attempted to isolate the effect of the noxious characteristic from other site amenities. Several studies indicate that increased distance from the site has a positive effect on property values, all else being equal. Stated another way, the real estate market places a premium on increased distance from the contaminated site. For example, the March 1993 EPA draft of the "Regulatory Impact Analysis for the Final Rulemaking on Corrective Action of Solid Waste Management Units" shows that property values were impacted negatively within a four mile radius of a contaminated treatment, storage, and disposal facility. Another study by Janet Kohlhasse in 1991 showed a negative impact that ranged from 0.0237 to 0.0312 per mile from a Superfund site, with negative effects realized more than six miles from the site.

Because of their proximity to the contaminated sites, adjacent and nearby properties may be affected by the NPL site's contamination through a number of different exposure pathways (e.g., groundwater contamination, noxious odors, airborne dust). If current and potential owners of the surrounding properties perceive some significant risk or other displeasure associated with this exposure, the effect essentially lowers the market value of the offsite parcel.

An approach called "benefits transfer" was used to estimate the value changes for residential properties near three NPL sites. "Benefits transfer" refers to the use of

⁵ Measurement of the effect on property value per mile further from a noxious site has been estimated by Diamond, "The Relationship Between Amenities and Urban Land Prices," *Land Economics*, 1980, 56(1):21-32; Smith and Desvousges, "The Value of Avoiding a LULU: Hazardous Waste Disposal Sites," *The Review of Economics and Statistics* 1986, 68(2):293-299; Michaels and Smith, "Market Segmentation and Valuing Amenities with Hedonic Models: The Case of Hazardous Waste Sites," *Journal of Urban Economics*, 1990, 28:223-242; Kohlhasse, "The Impact of Toxic Waste Sites on Housing Values," *Journal of Urban Economics*, 1991, 30:1-26; Nelson, et.al., "Price Effects of Landfills on House Values," *Land Economics*, 1992, 68(4):359-65.

empirical estimates from one study to evaluate effects at other sites. The three sites chosen for this analysis are: Chisman Creek, a former fly ash disposal area in suburban Yorktown, Virginia; Chem-Dyne, a former chemical storehouse in a residential area of Hamilton, Ohio; and Harris (Farley St.) Site, located on the outskirts of metropolitan Houston, Texas.

Surrounding residential property value data for the three NPL sites were obtained from the Geographic Information System (GIS). GIS is capable of fusing together spatial, physiographic, and socioeconomic information for an integrated analysis. This system was used to obtain the baseline market values and linear distance to the NPL subject site for all properties located between 0.5 miles and 2 miles of the NPL sites. The values reflect data from the 1990 Census of Population. The results of the analysis are shown in *Exhibit 3*.

The economic studies referenced above show that the values of property located near the outer edge of the contamination area (i.e., 2 miles from the site) are affected to a much smaller degree than are those located immediately adjacent to the site. Consequently, removal of the contamination has only a slight effect on these outlying property values. This explains why the effect is smaller for Chisman Creek, where the housing properties are distributed more toward the outer part of the 2-mile zone, than for Chem-Dyne, where this is not the case. This effect is even more pronounced at Harris (Farley St.) site, where the average distance to the site for all properties within two miles is over 1.5 miles. More information is needed to extrapolate these findings to other sites.

The estimated changes in property values shown in Exhibits 2 and 3, respectively, should be viewed only as order of magnitude estimates for a small sample of Superfund sites. Without cleanup, at least portions of the land area at many of the sites would have no value. The negative impact of these contaminated areas on adjoining areas is not reflected in these estimates.

Groundwater contamination often extends beyond property boundaries, and if left unmitigated, may spread further from the site over time. Without the Superfund cleanup actions to address the contamination source, groundwater contamination would ultimately affect a much larger area. Property values would likely be negatively impacted throughout the area overlying a contaminated aquifer or throughout the area dependent on such an aquifer for drinking water. Such property value impacts also are not reflected in the estimates of property value changes derived in this report.

Finally, and perhaps most importantly, the estimated changes in the value of property do not reflect the total benefit attributable to Superfund response actions. The greatest benefit attributable to the Superfund program is perhaps the reduced risk of exposure to hazardous substances, which translates into avoided health care costs and a

higher quality of life for people who live or work on or near a remediated Superfund site.

EXHIBIT 3
ESTIMATED CHANGES IN OFF-SITE PROPERTY VALUES

	Total Property Value within 2 miles (\$million)	Changes in Property Values within 2 Miles (\$millions)	Number of Owner Occupied Housing Units within 2 Miles	Property Value Effect per Housing Unit (\$dollars)	Percent of Total Property Value Effected within 2 miles	Average Distance of Properties to Site (miles)
Chem-Dyne, OH	\$430.6	\$11.1 - 25.2	8,885	\$1,250 - 2,830	2.6 - 5.9%	1.16
Chisman Creek, VA	\$461.8	\$3.1 - 8.7	6,932	\$458 - 1,285	0.7 - 1.9%	1.41
Harris (Farley St.), TX	\$171.3	\$0.265 - 1.9	3,125	\$85 - 608	0.2 - 1.1%	1.53

CHAPTER 3

ACCELERATING SUPERFUND RESPONSE

When CERCLA was first enacted, relatively little was known about the efficiency and effectiveness of environmental remediation technologies. Many of the technologies were first being piloted in the field. Each Superfund site was relatively unique, with unknown contamination and uncertain remedies. Because of this uncertainty, each site required a full analysis of the feasibility of alternative remediation technologies, and a full spectrum of data sampling and analysis was required to fully characterize each site.

Over the years, however, certain contamination and remediation patterns have developed. It became easier to anticipate the presence of specific hazardous substances at certain sites. Production and disposal patterns within industry sectors began to evolve, and these patterns created contamination that could be addressed by a limited number of feasible and cost effective remedial alternatives. It also became clear that a full spectrum of data sampling and analysis may not be needed to initiate action at sites whose histories are relatively well known and the nature of the contamination relatively obvious.

To expedite the Superfund response process, EPA is rethinking the way sites are evaluated and addressed. The goal is to improve the rate at which risks are reduced by creating greater flexibility for taking quicker actions to reduce risks, reducing duplicative activities to improve response efficiency, and applying lessons learned in selecting remedies. This chapter describes some of the initiatives EPA has begun as it revitalizes the Superfund program. Section 3.1 describes the presumptive remedy initiative and presents some estimates of benefits that may be attributable to that initiative. Section 3.2 describes the benefits associated with the use of computer-assisted, field generated data analysis. Section 3.4 discusses improvements in the enforcement arena and the use of *de minimis* settlements.

3.1 SACM INITIATIVES

The Superfund Accelerated Cleanup Model (SACM) approach to cleaning up hazardous waste sites was launched by EPA on March 1, 1992, with the publication of **SUPERFUND ACCELERATED CLEANUP MODEL (SACM!): THE NEW SUPERFUND PARADIGM**. The document acknowledged that although the program had evolved since the 1980 enactment of the Comprehensive Environmental Response, Compensation, and Liability Act, it often developed in response to conflicting expectations and mutually exclusive demands. The result was a patch-work of solutions that still left the program open to a multitude of critics who claimed, among other things, that the program was too slow or too costly. EPA believed that SACM would respond to these criticisms.

Throughout the remainder of the year, guidance and fact sheets were developed to disseminate information to all Superfund stakeholders about the new approach. These fact sheets on SACM boldly state that the purpose of SACM is to make Superfund cleanups more timely and efficient. Further, that this will be accomplished through more focus on the front end of the process and better integration of all Superfund program components. The approach involves:

- o A continuous process for assessing site-specific conditions and the need for action;
- o Cross-program coordination of response planning;
- o Prompt risk reduction through early action (removal or remedial);
- o Appropriate cleanup of long-term environmental problems;
- o Early public notification and participation; and
- o Early initiation of enforcement activities.

SACM is a process change considered for all Superfund activities. Implementation of this policy is consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) and with CERCLA. Overall Superfund priorities remain the same: deal with the worst problems first; aggressively pursue enforcement; and involve the public and relevant State agencies at all appropriate stages of the work.

SACM combines early actions, such as removing hazardous wastes or contaminated materials, with on-going studies so that immediate public health and environmental threats are taken care of while long-term cleanups are being planned. Early actions may eliminate most of the risks posed to people by hazardous waste sites. While these actions are underway, a Regional Decision Team (RDT) of Superfund site managers, risk assessors, community relations coordinators, Regional counsel and other experts who monitor site studies to determine what additional short-term and/or long-term actions are required. Restoration of ground water is an example of long-term actions.

The new model attempts to take down institutional barriers that had grown over time and lead to bureaucratic distinctions between "NPL" and "non-NPL" sites, rather than a focus on the worst sites. Under the new model, all sites where Superfund takes any kind of cleanup action enter the system through one "Superfund door" for review and assessment. The distinctions between the "remedial" and "removal" programs are

greatly reduced so that the Superfund program as a whole can focus its resources on the worst sites first.

Previously, the removal program had been seen as a quick action program to address emergencies or to stabilize sites while they awaited the more deliberate process of the remedial program. Sites entered the removal program once an action memorandum was signed that documented the threat to human health and the environment and the CERCLA statutory authority for such action. The traditional remedial process required a remedial investigation and feasibility study (RI/FS) which lead to the decision document, a Record of Decision (ROD). After the Record of Decision was signed, a remedial design (RD) was developed and implemented in the remedial action (RA). At times, due to variations in practices and the lack of consistent practices, there had been confusion as to a site's status.

Under the SACM approach, there is one integrated site assessment to develop the information needed for decisions throughout the entire Superfund process. The Regional Decision Team is an integral part of the site assessment process. Under SACM, coordination among removal, remedial, and State agency personnel is critical and fostering that coordination is a role of the Regional Decision Team. At the point where assessment information is adequate for decision-making, the Regional Decision Team convenes to consider options for the site. The Regional Decision Team can then direct or recommend a response action (e.g. time critical removal, non-time critical removal, or remedial action), decide to collect additional data, develop an enforcement strategy, and recommend placing the site on the NPL. Of course, emergency situations continue to be dealt with immediately and do not go through the Regional Decision Team.

The essential elements of SACM are:

- o Streamlines and integrated site screening and risk assessment;
- o Regional Decision Teams to "traffic cop" all sites;
- o Early action to reduce immediate risk;
- o Long-term cleanup to restore the environment, and;
- o Enforcement, community relations, and public involvement throughout the process.

Under SACM, EPA continues to pursue potentially responsible parties (PRPs) who may have caused or contributed to the site contamination to the maximum extent possible. Expedited enforcement and procedures for negotiating PRP involvement in

cleanups secures their participation. Public and State participation and access to information are encouraged during all phases of the process.

Regional Pilots

Also during 1992 and in 1993, EPA initiated Regional pilots to demonstrate the implementation of SACM, as well as to document the benefits of SACM. EPA initiated 15 Regional pilots dealing with the acceleration of the Superfund cleanup process and enhancement of equity in the process. Now roughly half of these pilots are complete. Broad benefits seen from the pilots were the beginning of the implementation of initiatives such as SACM and presumptive remedies and increased coordination within the Regions.

Some Regional pilots have focused on the early action aspect of SACM and tried to obtain information on its benefits. At the Kearsarge, New Hampshire Superfund site, Region I undertook an early action to deal with the surface contamination at the site. The Region used the removal process to immediately cleanup the contamination. A pre-SACM approach would have required the writing of a remedial engineering design before a remedial action was begun to meet the cleanup levels specified in the Record of Decision. The Region estimates that 6 to 12 months and approximately \$300,000 to \$450,000 were saved with the use of this early action. In addition the Region believes that the early action resulted in quicker risk reduction at the site and a heightened public confidence by the local community which are primary goals of SACM. The Region also began a long-term remedial action dealing with the groundwater contamination at the site at the same time as the removal action; thus illustrating the compatibility of the two processes under a SACM approach.

Region X reduced costs and saved time at two sites by using early actions in the form of removals rather than the long-term remedial processes. At the Yakima Plating site, the remedial action cleanup described in the Record of Decision was accomplished as a removal under the management of personnel from both programs using joint resources. As required by the traditional long-term approach, a 30-day comment period was provided for the Remedial Investigation and the Feasibility Study (RI/FS) and the Proposed Plan which proposes the recommended remedy to the public. The estimated time savings was 15 months, of which 12 months were saved because a remedial design was not needed. The costs saved by not requiring a remedial design were over \$100,000 (based on National and Regional averages).

At Allied Plating, Region X, working with the U.S. Army Corps of Engineers, performed a pre-Record of Decision removal leading to a finding that no further action was needed at the site. Again, about 12 months and over \$100,000 were saved because a remedial design was not needed. In addition, the Region estimates that \$400,000 were saved by using the removal process than if the traditional remedial process had been used.

Region VI designed pilots that used the SACM process and their own accelerated Record of Decision (ROD) process they call a "Lightning ROD." A major finding from both the SACM and Lightning ROD pilots was that the intense up-front effort by the Regional Decision Team and associated staff required at least twice the "average" in-house resources in the first year for each site. Forty-eight different professional staff contributed to the projects, some of them working full-time. However, this up-front investment has already resulted in impressive time savings of 2 to 3 years and is expected to result in a net resource savings of 30% (by reducing the time from NPL proposal to initiation of cleanup from 8 to 2.5 years). The Region has learned that because of the up-front resources required, managers will have to carefully prioritize sites for such an accelerated effort.

Region IV has successfully implemented a pilot program at three sites to integrate the Expanded Site Investigation (ESI) with the RI/FS process and to facilitate earlier Potentially Responsible Party (PRP) participation in the remedial process. Under this approach to accelerate cleanup, the PRPs, with EPA oversight under a consent agreement, conducted a combined ESI-RI/FS to determine the full extent of contamination at the site while generating the data necessary to complete a Hazardous Ranking Score (HRS) package. The first site completed resulted in a time savings of two years over the traditional remedial process involving separate ESIs and RIs. Also, PRPs paid for EPA oversight of the integrated assessment and all costs of the investigation, conserving Superfund resources for truly abandoned sites.

The first site completed was referred to the State of Tennessee for remedial design/remedial action, saving the State time and money in the remedial response process. The remaining sites coming out of the RI/FS phase with eligible HRS scores will be immediately proposed for the NPL and moved into RD/RA, again with two years in time savings.

Full Implementation of SACM

On October 1, 1993, a joint memorandum from the Office Directors of the Office of Emergency and Remedial Response and the Office of Waste Programs Enforcement stated that a key priority for fiscal year 1994 will be moving SACM from a pilot approach to "business as usual." EPA regional offices are now working toward this end.

3.2 PRESUMPTIVE REMEDIES

Presumptive remedies are preferred technologies for common categories of sites, based on historical patterns of remedy selection and EPA's scientific and engineering evaluation of performance data on technology implementation. The objective of the presumptive remedy initiative is to use the program's past experience to streamline site investigation and speed up selection of cleanup actions. EPA plans to develop a series of directives on presumptive remedies for various types of sites. In particular,

presumptive remedy directives have been developed, or are being developed, for the following site categories: municipal landfills, sites with soil contaminated with volatile organic chemicals (VOCs), wood treatment sites, coal tar sites, sites contaminated with PCBs, grain storage sites, and groundwater contaminated sites.

Presumptive remedies draw upon past Superfund experience to streamline the response process, without discouraging the use of innovative technologies or non-standard approaches to sites with special characteristics. Instead of evaluating more than a dozen potential remedies at every site, two or three remedies are identified in a guidance document as having a high probability of success, based on EPA's historical experience. Based on the "presumption" that one of these remedies will prove to be ideal for a particular site, the data collection efforts and risk assessments can be more focused, and feasibility studies can be completed faster and at a lower cost.

In developing presumptive remedy guidance, EPA selects site categories whose contamination is usually addressed by a small number of remedies, and where there are a significant number of these types of sites that would benefit from standardized approaches. EPA has developed the first presumptive remedy guidance for VOCs in soil and municipal landfills. Presumptive remedies have been identified for these site categories, draft guidance has been prepared, and Regional pilots are in progress for municipal landfill sites.

Potential Benefits of the Presumptive Remedy Initiative

EPA estimates that as many as 600 future NPL sites may benefit from the use of presumptive remedies.⁶ The derivation of this estimate was based on the assumption that future NPL sites will have a similar profile to historical NPL sites.

In general, use of presumptive remedies is expected to result in cost and time savings during the site investigation and remedy selection stages of the response. Standardization of these processes through presumptive remedy guidance also should increase consistency in site assessments, remedy selections, and remedy designs, and will likely result in fewer decision errors throughout the Superfund response. The information presented below is speculative in nature, because the presumptive remedy initiative is being field tested and little data exist to truly measure the benefits of using presumptive remedies.

⁶ Estimates were developed by the Hazardous Site Control Division in EPA based on data from the Record of Decision (ROD) Information Database and the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS).

Site Assessment Stage

Generally, data collected during the Site Assessment are used to identify the contaminants of concern and the most significant exposure pathways. Although site-specific conditions will necessarily drive the investigation, presumptive remedies may facilitate these determinations in the following way:

- *Focused sampling efforts, enabling EPA to limit the analysis to exposure pathways of true concern.* For example, PCB and coal tar sites have been shown to be contaminated with hazardous substances that have low solubility or low vapor pressure. Such contaminants generally would not pose a significant threat to groundwater or likely pose significant risks to human health through the volatilization pathway. The presumption about the contaminants of concern at these sites should allow early focus on the more significant exposure pathways, enabling concentration of data collection and analysis on the remedial design for the presumptive remedy, with an associated reduction in sampling efforts for pathways of less concern and remedies unlikely to be selected.
- *Effective early actions and streamlined risk assessments.* For example, the presumptive remedy for municipal landfill sites is to cap the site to control the source, along with pumping and treating of the groundwater to contain the contaminated plume. Because groundwater data are often available at municipal landfill sites, it may be feasible, based on the presumptive remedy guidance, to begin construction of a cap as an early action to eliminate leaching at the site. Similarly, the risk assessment at the site may focus on the presumptive remedy, enabling design of a more cost-effective sampling and analysis regime.

Feasibility Study

The presumptive remedy initiative may have its greatest impact on the feasibility study (FS) and Engineering Evaluation/Cost Analysis (EE/CA) stage of the response. The FS and EE/CA represent those stages in a Superfund response in which alternative treatment technologies are evaluated. Under the presumptive remedy initiative, significant reductions would be likely in the time and costs required to analyze the remedial alternatives because of the abridged list of alternatives that would need to be evaluated at the site. The presumptive remedy guidance allows the site managers to focus directly on a limited number of remedial alternatives.

Exhibit 4 illustrates the potential savings that may be realized from the presumptive remedy initiative by focusing on one site, Saunders Supply Company, Chuckatuck, VA. Exhibit 4 shows the standard feasibility study (FS) phase as conducted

EXHIBIT 4
POTENTIAL SAVINGS FROM PRESUMPTIVE REMEDIES

Steps of Feasibility Study	Activities at Saunders Site (Example) ¹	Impacts of Presumptive Remedies
Development and Screening of Alternatives	Define Contaminated Media As, Cr, and Cu (CCA), PCP, and dioxin/furans identified as COCs. Distributions determined in soil, ground water, and surface water with respect to risk-based cleanup goals and regulatory levels.	Draft guidance provides information on expected contaminants, likely media and areas needing treatment, and sampling strategies which will help focus sampling efforts and help avoid resampling. Information needs for remedy selection and design are also given. This will encourage a single, multimedia sampling event to serve both purposes, streamlining site characterization activities.
Develop Preliminary Remediation Goals/Identify ARARs	Federal and State ARARs identified for determining whether waste is hazardous and treatment levels. Risk-based levels for protection of human health and environment also presented (from RI risk assessment).	Guidance on Federal ARARs specific to wood treatment contaminants could provide a head start for ARAR identification. Risk assessment will not be affected except by early focus on COCs.
Identify Potential Treatment Technologies	General response actions identified for soils, ground water, sediments, storm drains, and concrete pads. Applicable remedial technologies identified for each media, including treatment technologies. About 30 remedial technologies (each) identified for soil, ground water, sediment.	Draft guidance pre-identifies three CCA + PCP treatment technology trains for soil and sediment and two for ground water. General response actions and remedial technologies for storm drains and concrete pads will still need to be identified, as will containment and limited or no action alternatives
Screen Technologies	Remedial technologies screened for each media based on effectiveness, implementability, and cost. Evaluation for each media included possible effects of remedies for other media. Soil and sediment treatment technologies combined. Soil and ground water treatment technologies reduced to 7 each.	Step eliminated by presumptive remedies for soil, sediment, and ground water treatment. Screening still necessary for storm drains and concrete pads, or if on-site containment or no or limited action are to be considered.

EXHIBIT 4 (continued)
POTENTIAL SAVINGS FROM PRESUMPTIVE REMEDIES

Steps of Feasibility Study		Activities at Saunders Site (Example)¹	Impacts of Presumptive Remedies
Development and Screening of Alternatives (cont.)	Assemble Technologies into Alternatives/Select Alternatives	Technologies assembled into alternatives. Further screening reduced 8 remedial alternatives for soil and sediment to 5 for detailed analysis. Four alternatives were developed for ground water and 3 for concrete pads. Because of interaction between media, alternatives for soil, sediment, ground water, and concrete pads were combined into 7 alternatives for detailed analysis..	Presumptive remedies will limit numbers of alternatives and probably eliminate screening of alternatives. Guidance could facilitate this step by providing steps for integrating technologies and media into alternatives at specific sites.
	Detailed Analysis of Alternatives	<p>Modify Preliminary Remediation Goals</p> <p>Further Refine Alternatives as Necessary</p> <p>Analyze Alternatives Against Nine Criteria and Against Each Other</p>	<p>Prior knowledge on treatment technology effectiveness and collecting media-specific information necessary to help determine site-specific treatability will help preclude this step at most sites.</p> <p>Prior knowledge on treatment technologies and limited number of alternatives will likely eliminate this step at many sites.</p> <p>Presumptive remedy guidance may provide generic discussion of nine criteria analysis (excluding state ARARs and community and state acceptance) and also will lead to less effort expended on the detailed analysis of alternatives within the FS and EE/CA reports. The process will allow the public, state, and responsible parties the opportunity to rebut the presumptive remedies on a site-specific basis.</p>

at this site, and describes for each step the predicted savings with the presumptive remedy approach.

Response by Responsible Parties to Presumptive Remedies

Use of presumptive remedies may facilitate negotiations with Potentially Responsible Parties (PRPs) by reducing uncertainty and limiting the likely remedial alternatives that will be seriously considered during the remedy selection process. As a result, responsible parties will be better able to bound their potential liabilities, increasing the likelihood that an amicable settlement may be reached quickly and actual remediation begun within a shorter time frame. Of course, actual time savings during the negotiation stage will be very site specific, depending directly on the number of responsible parties, the nature and extent of the liability, and who the responsible parties are.

Presumptive remedies are being piloted in both EPA Region 1 and Region 6. In both Regions, EPA personnel are very optimistic about the likelihood that the presumptive remedy initiative will significantly reduce the time (and thus the costs) associated with negotiating a settlement with responsible parties at the sites.

EPA Region 6 expects to realize as much as a 35 percent savings in time (1.25 years) in post-ROD negotiations at their wood treatment and municipal landfill pilot sites. Region 1 has completed negotiations over a presumptive remedy (i.e., a municipal landfill cap) in two months, as opposed to the 6 to 12 months that are more usual for RI/FS negotiations.

In addition to facilitating negotiations with responsible parties, use of presumptive remedies may stimulate the number of voluntary cleanups by establishing standard remedial measures and site assessment procedures for specific site types. Presumptive remedies should help mitigate two of the greatest hindrances to voluntary cleanups: PRPs' uncertainty as to what will be required of them if they take responsibility for a cleanup, and PRPs' concern that requirements may significantly change during the course of a remediation.

Voluntary cleanup of coal tar sites may be a good example of how reduced uncertainty and use of presumptive remedies can facilitate response actions. In at least five States, utility companies have volunteered to take over investigation and remediation of coal tar sites. Site-to-site similarities, and the industry trade association's efforts to develop presumptive remedy guidance, may be partly responsible for these voluntary efforts.

Cost and Time Savings

EPA estimates that response costs and time during the RI/FS stage of the response will be reduced between 8 and 16 percent under the presumptive remedy initiative. Assuming that about 600 sites currently listed on the NPL could benefit from the use of presumptive remedies, savings could reach \$50,000 to \$125,000 per site during the RI/FS stage. Although this estimate is very rough, it is based only on the obvious opportunities for savings, and does not acknowledge any savings attributable to a streamlined negotiation process due to an improved understanding by both responsible parties and the local stakeholders at the site of what to expect from the remediation. This estimate also does not account for cost savings from fewer decision errors and voluntary cleanups.

Early empirical evidence indicates that the presumptive remedy initiative may significantly reduce traditional response times. Preliminary information on the Region 6 pilots indicate that presumptive remedies may have contributed to a 65 to 75 percent reduction in the duration of RI/FS activities. With additional savings due to shortening PRP negotiations for conducting the RA, Region 6 projects an overall time savings of about 60 to 65 percent, reducing the overall length of time to reach the RA stage from 8 to 3 years.

Preliminary information on a Region 1 municipal landfill presumptive remedy pilot also shows significant savings. By relying on historical groundwater data and basing its actions on the presumptive remedy for a municipal landfill (i.e., a cap), the RI/FS for the site is predicted to be completed in about two years vs. the normal period of 41 months, with construction of the cap to be completed in a little over two years after initiation of the remedial process. Traditionally, EPA has found that it takes 41 months from the completion of the Record of Decision (ROD) to completion of the remedial design and 55 months to complete the construction of the remedy for all types of sites.

Both of these estimates, although very promising, are also very preliminary. In both cases, it is difficult to project what costs and schedules would have been without the use of the presumptive remedy guidance. Without an accurate baseline, cost and time savings must necessarily be speculative.

3.3 QUICK TURNAROUND METHOD (QTM) ANALYTICAL SERVICES

In 1980, the same year that CERCLA was signed into law, EPA initiated the Contract Laboratory Program (CLP). This established on a competitive basis, a community of contract laboratories which were to provide large volume, standardized analyses in a cost-effective manner. As the Superfund program grew, the need for the analytical services provided through the CLP also grew. The capacity of the participating laboratories to analyze both organic and inorganic samples increased from about 5,000 samples annually to more than 78,000 samples annually in 1991.

During this period of explosive growth, problems were identified and attempts were made to resolve them. In March 1991, the Deputy Administrator requested the formation of a task force to review the CLP program. The task force reported that the most frequent complaint from regional officials involved excessive turn-around-times. The Regions reported that by the time the analytical results were reported by the laboratory, screened for contract compliance, reviewed and validated by the Region, and reported to the RPM, from three to eight weeks or longer had passed.

The Quick Turnaround Method (QTM) analytical service was developed to provide a faster and more efficient process for analyzing chemical data at a site. There is a need to collect chemical samples at several stages in the Superfund response process. In some situations, the need to obtain the analytical results quickly is critical because the data are essential to decisions that have to be made quickly. The QTM analytical service offered through the Contract Laboratory Program (CLP) can be used to provide analytical data on 81 organic target compounds within 48 hours. The traditional time frames for confirmatory organic determinations under CLP are 14 days and 35 days.

QTM is designed to produce data of known and documented quality that can be used for screening, monitoring, and other hazardous waste site assessments. It provides rapid turnaround for samples of water, soil/sediment, and waste. QTM is most appropriate for use in situations where site contaminants are known or highly suspected from previous evaluations, and when analytical data are needed rapidly. Analytical results through QTM are much less expensive than traditional CLP data. As a result, the use of QTM in combination with CLP confirmatory analyses can be highly cost effective. Comparisons between QTM and CLP confirmatory results have shown the QTM data to be generally reliable.

QTM became broadly available in April 1992. Currently three laboratories are under contract to provide QTM service through the CLP. Tentative long-term plans include expanding QTM to address metals if the Regional demand for the organic analyses under QTM increases.

Applications for QTM arise in site inspections, site characterization, treatability studies, engineering designs, and during actual response actions at a site. One particularly important QTM application is in site characterization. QTM can enhance site characterization efficiency and cost effectiveness by increasing the number of "hits" in the more rigorous "full organics" CLP analytical methods. By locating high concentration areas using QTM results, samples submitted for confirmatory CLP analysis can be selected carefully. For example, samples that will drive Hazard Ranking System (HRS) scores could be selected from a larger number of samples analyzed through the QTM

service⁷. Results obtained using QTM can be used to identify the specific locations/samples where confirmation analyses are needed.

Examples of specific applications where a quick response could be important include the following: directing sampling efforts; determining the presence or absence of organic contaminants in soil or water samples; compound identification for safety reasons; preliminary quantitative analysis of contaminants; monitoring concentration gradients during investigations; optimizing a sampling grid; definition of pollutant plumes in groundwater; placement of monitoring wells and selection of screen intervals; identifying critical samples for confirming analyses; optimizing analysis conditions (e.g., dilutions, extract cleanups) for confirming analyses; and monitoring effectiveness of waste treatment.

Historical Experience With QTM

The first QTM pilot study was carried out in Region 2 between April 1991 and January 1992. Since the pilot study, Region 2 Project Managers have continued to use QTM on a regular basis. According to the CLP Sample Management Office, Region 2 has requested QTM almost every week for the last 18 months.

Region 2 personnel are enthusiastic when describing how the ability to have validated data quickly offers a considerable cost savings, particularly where there is a field crew mobilized and excavation equipment is on-site. QTM data were used at the BROS/Bridgeport remedial site in New Jersey to determine if the soil excavations in a 13-acre lagoon had proceeded to an adequate depth to achieve the PCB cleanup goals. The excavated soil was treated by incineration and then returned to the site to fill the excavated area. Use of QTM helped to expedite the cleanup actions by providing the chemical analysis results quickly, thus reducing the level of effort necessary to complete the job.

QTM was also used at the Higgins Disposal site in Franklin Township, New Jersey. This site had been used for industrial waste disposal since 1956, and contained buried, leaking unmarked barrels. When the site contamination was discovered, the site was being used as a horseback riding facility. It was important to inform people using the site of the potential chemical exposures. QTM was used to determine the contents of the barrels. The results indicated the presence of benzene, toluene, phenols, pesticides, and other contaminants. The EPA site manager presented the QTM findings and information on the constituents of concern at a public meeting shortly after the buried containers were found. The QTM service enabled EPA to obtain this information

⁷ HRS scores reflect the extent of chemical contamination at a site and the potential for exposure to contamination. HRS scores above 28.5 are needed to qualify a site for the National Priorities List.

and make it available promptly, so that individuals could make informed decisions about using the riding facility. In addition, the information on the types of chemicals was used to determine how the materials should be disposed. Based on the QTM results, wastes were segregated by their waste categories for disposal.

QTM was also used at the Higgins Disposal site to decide termination levels for soil excavations. QTM results were used to determine if the excavation had removed all of the contaminated soil or if further excavation was needed. The results of the chemical analysis were available quickly enough so that decisions could be made while the equipment and crew were still on site.

There are plans for using QTM in the site investigation for another New Jersey site where screening is needed for HRS scoring. A total of 320 subsurface soil samples will be collected and analyzed using QTM. Results from these screening samples will indicate which samples are critical to the HRS scoring. The information will be used to select 40 samples for confirmatory CLP analysis. The per-sample cost for the confirmatory CLP analysis is around \$1,100, compared to around \$300 for the QTM. By combining QTM with the CLP's Routine Analytical Services for the confirmatory analyses, a savings of approximately \$212,000 is expected for this site investigation.

During early 1992, Region 6 employed a QTM pilot as part of their "Lightning RODs" pilot projects. These projects were initiated to demonstrate ways to shorten the time spent in preconstruction study and design at three sites. Expedited analytical data turnaround was one of the improvements enlisted to meet a tight field schedule. During this effort, the QTM laboratories performed 600 analyses over a 3-week period and returned validated data to the site and to the Regional Office within an average of 4.5 days after each day of sampling. This use of the QTM service occurred while the QTM program was still under development. Since April 1992, the QTM program has been returning data to the Regional Office within the 48-hour time frame.

In some cases, the need for quick analytical data is already being met through other means. For example, Region 4 uses its quick analytical service, "Fast Analytical Screening Procedure" (FASP). FASP utilizes a mobile laboratory with organic and metals capabilities and can provide 24-hour turnaround times. This service offers laboratories with telecommunication capabilities, and is available for pre-remediation through post-remediation sampling. At least three other Regions also have mobile laboratories that may, in part, provide a similar service as that provided by the QTM service. The capacity of the mobile laboratories, however, may be insufficient to provide all of the analytical capability needed for quick turnaround analyses.

3.4 *DE MINIMIS* SETTLEMENTS

Small waste contributors often complain that they are not able to settle with EPA until late in the remedy process, and settlement is often dependent on volumetric

information that is not comprehensive at many sites. Moreover, many small waste contributors, who often are small businesses, complain that they spend an inordinate amount of time acquiring information about the Superfund process and understanding the terms of a proposed settlement.

As part of the Superfund revitalization effort, EPA has placed greater emphasis on reaching equitable settlements with individual responsible parties as early in the process as possible. To this end, EPA has reemphasized the use of *de minimis* settlements to resolve the obligations of small-volume waste contributors early in the negotiation process. Section 122(g) of CERCLA allows the Agency to enter into *de minimis* settlements whenever practicable and in the public interest. Two groups of parties are eligible for these settlements: *de minimis* waste contributors and *de minimis* landowners. Under a *de minimis* waste contributor settlement, parties responsible for only small amounts of hazardous substances at a site can be released from further liability after paying an agreed amount to EPA. Most of the *de minimis* settlements to date have been with waste contributors.

One goal of Superfund enforcement is to focus Regional attention on reaching *de minimis* settlements as early as possible, with as many qualified parties as possible. Early settlements (e.g., settlement prior to the selection of remedies) allow parties to resolve their liability early in the process. *De minimis* settlements should result in increased equity and efficiency, because more attention may be focused on the major contributors to the hazardous substances at a site. *De minimis* settlements are expected to reduce transaction costs⁸.

Use of *De Minimis* Settlements to Date

In February 1988, EPA announced a major *de minimis* settlement for four Cannons Engineering Corporation sites in Massachusetts and New Hampshire. This settlement involved 276 PRPs. Their combined payments were \$11 million out of a total of about \$50 million for the site cleanup. To date, there have been 125 final *de minimis* settlements involving over 6,000 parties as of September 30, 1993. Of the total number of parties offered *de minimis* settlements, 63 percent have agreed to settle.

⁸ Transaction costs consist of expenditures that are required to carry out an activity, without contributing significantly to the substantive production of that activity. One example of transaction costs is the time and costs associated with information gathering for small businesses who are PRPs, who must learn about the Superfund process. There are other sources of transactions costs often incurred by a PRP. These are costs incurred to: (1) search for other PRPs; (2) negotiate with other PRPs and EPA over apportioning costs; (3) recover costs from other PRPs; (4) negotiate with EPA over remedy selection and cleanup implementation; and (5) negotiate with insurers for reimbursements of costs. (Dixon, et al., "Superfund: Private-Sector Expenditures and Transaction Costs," EPA, 1993, p. 4) Because transaction costs do not usually contribute substantively to site cleanups, it is desirable to avoid or minimize these types of costs.

Final *de minimis* settlements, as of September 1993, total more than \$131 million of these, 89 percent have been settlements with *de minimis* generators. A recent report, The First 125 De Minimis Settlements, (U.S. EPA, Office of Waste Programs Enforcement, October, 1993) notes an upward trend in *de minimis* enforcement activity. Out of the total 125 final *de minimis* settlements at 78 sites, 58 percent occurred in 1992 and 1993.

EPA issued guidelines for streamlining the *de minimis* settlement process on July 30, 1993. These guidelines establish the minimal level of information necessary before a Region can consider a *de minimis* settlement, provide a methodology to construct payment matrices in appropriate circumstances, and encourage Regions to take a more active role in facilitating the settlement. Regions are no longer required to complete a waste-in list prior to offering a *de minimis* settlement which should allow many more PRPs to qualify for *de minimis* settlements. To emphasize the Agency's commitment to these settlements, EPA has targeted 35 settlements for the 1994 fiscal year.

Benefits of *De Minimis* Settlements

Early waste contributor *de minimis* settlements promote efficient case load management at sites where there are wastes from multiple generators. Eliminating *de minimis* parties early in the response process reduces the number of parties with which EPA and other PRPs must negotiate with for implementation of the selection of the site remedy. Early settlements may also provide the Agency with reimbursement of costs already incurred and may provide funds for future site cleanup. Collecting funds early in the response process benefits the Agency and all PRPs. Amounts received from *de minimis* settlements reduce the amount non-*de minimis* parties would be liable for and a portion of that payment may be placed in a trust fund to defray future PRP cleanup costs. The availability of funds may also facilitate a global settlement, thus expediting the cleanup process and benefiting all parties and the public.

EPA Region 3 recently completed a pilot at the Tonolli Corporation site that involved *de minimis* settlements. Tonolli operated a secondary lead smelter and battery recycling facility between August 1974 and January 1986. Batteries were stripped for lead content. Contaminants identified at the site included cadmium, chromium, copper, lead, and arsenic. EPA Region 3 estimates that the Agency's cost, including contractor and Agency staff time, for settlements with about 200 *de minimis* parties was \$825,000. Most of the expenditures involved review and compilation of the waste-in information. These efforts, however, have resulted in collection of more than \$3.06 million as of June 1, 1993. Further payments resulting from the settlements are expected. For this site, there were two groups of settlements. In the first group, 170 parties signed and 161 of these have paid. The total settlement was \$3,491,233. In the second group, 33 parties signed settlements totaling \$542,124.

Early settlements with *de minimis* parties will generally entail lower transaction costs for the settling parties compared to settlements that occur during the RD/RA stage of the response, because the *de minimis* parties are involved in the process for a shorter period of time.

An increase in early *de minimis* settlements could also help to decrease the duration of later phases of the response. EPA data show that the actual durations for remedial design and remedial action, including time required to negotiate with PRPs, are longer when there are more than 100 PRPs.⁹ To the extent that negotiations with PRPs are a determinative factor in the duration of each phase of the response, eliminating *de minimis* parties, particularly if accomplished early in the process, could speed up selection of the final cleanup remedy.

Although *de minimis* settlements accomplished to date are considered costly to the Agency, the benefits to settling parties, including some reductions in transaction costs and increased equity in the Superfund program, may justify the expenditure. The total benefits of *de minimis* settlements (both in terms of efficiency and equity) will continue to increase, particularly as the Agency becomes more proficient in doing *de minimis* settlements, and as other administrative initiatives are implemented within the enforcement program.

⁹ Remedial design duration varied from about 16 to about 23 months (average 19.2 months) when there were 100 or fewer PRPs; the duration averaged 27 months for sites with more than 100 PRPs. Remedial action duration varied from 15.3 to about 29 months (average 22.8 months) when there were 100 or fewer PRPs; the duration averaged 32.4 months when there were more than 100 PRPs.

CHAPTER 4

COMMUNICATION INITIATIVES

The responsibility for remediating our nation's worst hazardous waste sites is shared between the Federal government, State and local governments, and responsible parties. Many sites are addressed directly by responsible parties through "voluntary" actions, that is, actions that are not directly motivated by administrative orders or consent decrees. Other sites are being remediated under State hazardous waste programs. As such, State and local governments, as well as the private sector, have been wrestling with many of the same problems that face the Superfund program today. Good ideas can come from lots of different and varied sources, and the Superfund revitalization effort has been soliciting good ideas from all parties interested and concerned about making the Superfund program work better.

In an effort to learn from past experiences, and to better understand the concerns of States and the public in general, EPA has engaged in an aggressive communications effort, soliciting ideas from all affected stakeholders in the hazardous waste cleanup arena. These communications have focused, in particular, on ways to improve the Superfund program.

EPA has sponsored or co-sponsored, with organizations such as the International City/County Management Association (ICMA) and the Association of State and Territorial Solid Waste Management Offices (ASTSWMO), a number of meetings to provide opportunities for EPA to hear from States, potentially responsible parties (PRPs), and the public, their views on Superfund and how to improve the process. The location of these meetings are indicated on the map in Exhibit 5. This chapter describes some of EPA's Superfund communication initiatives and their benefits.

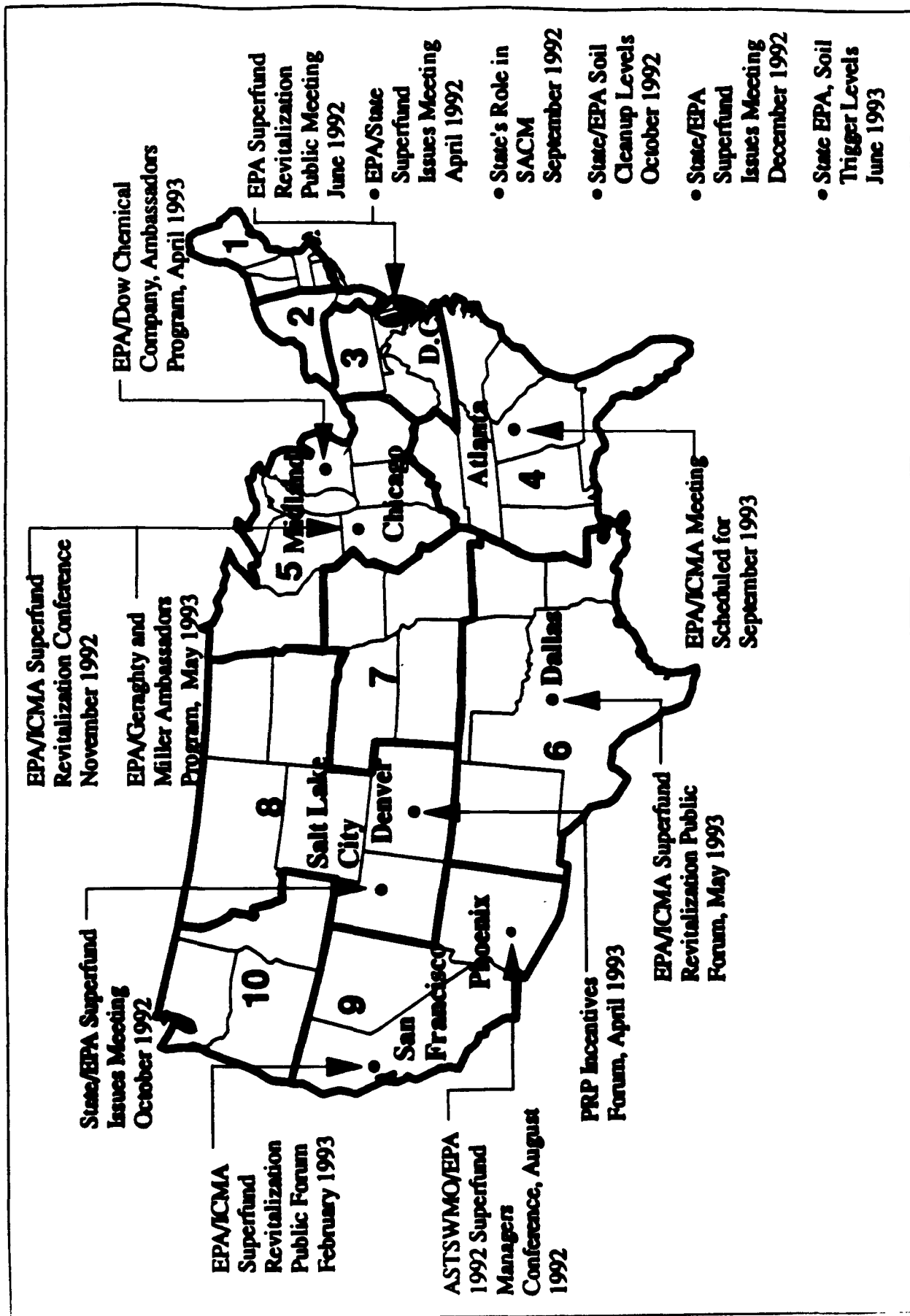
4.1 COMMUNICATIONS WITH STATES

Many of the challenges currently facing the Superfund program have been faced before by some State governments. The Federal and State governments are partners in meeting environmental challenges. To this end, EPA management and staff have met with State representatives on several different occasions this past year. Issues of discussion included the State role in Superfund revitalization and State experiences in enforcement and community relations, as well as technical issues (e.g., soil cleanup levels), program management (e.g., risk management and future land use), and procedural issues. These meetings have been both informative and extremely helpful.

Since April 1992, EPA has held seven State forums in cooperation with ASTSWMO to exchange information on Superfund management topics. Participants

EXHIBIT 5

EPA Communications Initiatives in FY 1992 and 1993.



have included EPA headquarters and Regional staff, State agency representatives, Department of Energy staff, and staff from the Agency of Toxic Substances and Disease Registry (ATSDR). The topics covered were diverse and timely, including consideration of future land use, voluntary cleanups, clean-up standards, communications, and cost sharing. The format of these meetings included presentations, questions and answers, and open discussion on topics. *Exhibit 6* briefly summarizes the meetings EPA has convened with State representatives over this past year to discuss pertinent Superfund implementation issues.

In addition to the EPA/State meetings described in Exhibit 6, there have been other opportunities for EPA to interact with States, including meetings of the State/EPA Superfund Policy Forum. EPA is also working with ASTSWMO on the non-NPL Cleanups Study. This study will collect data on State non-NPL cleanups in order to get a complete picture of the national cleanup picture. To accomplish this, ASTSWMO sent out a survey form to all of the States and territories requesting data on all State non-NPL cleanups to compile a national data basis. This study will:

- o Provide a more complete picture of CERCLA-influenced cleanups completed or underway;
- o Provide useful information on the large amount of State cleanup activity being conducted outside the Federal system;
- o Allow for a comparison of the quantity of cleanups being conducted by Federal vs. State governments on a national level and within individual States;
- o Allow interested parties to have the information needed to better communicate Superfund success;
- o Provide very timely information needed to participate in the dialogue with Congress on the role of States in the reauthorization of Superfund.

Benefits from Improved Communication

The purpose of the State/EPA meetings is to ensure that States have an opportunity to express their views and share their experiences with EPA. Through these meetings, States have an opportunity to share their successes and inform others facing similar challenges about lessons learned. Also, because States are co-implementers of Superfund with EPA, the forums provide the States with an important opportunity to become familiar with EPA policies regarding Superfund implementation.

EXHIBIT 6
EPA AND STATE MEETINGS

DATE AND PLACE	ATTENDANCE	ISSUES DISCUSSED
1. April 16, 1992 Washington, DC	EPA and ASTSWMO	<ul style="list-style-type: none"> ● Cost Sharing; ● Cleanup Standards; ● State ARARs/Federal Requirements; ● Permitting/Permit Equivalency; ● Presumptive Remedies and Risk Assessments; ● Dispute Resolution; and ● Consent Decrees.
2. August 1992 Scottsdale, Ar.	44 States, 2 territories, and 3 Indian tribes	<ul style="list-style-type: none"> ● State role in SACM.
3. Sept 25, 1992 Washington, DC		<ul style="list-style-type: none"> ● Individual State views on SACM issues.
4. Oct 13-14, 1992 Washington, DC	24 States, EPA Headquarters, and 7 EPA Regions.	<p>The objective was to gain an understanding of the status of regulation development efforts, and to identify key technical and management issues. Issues discussed included:</p> <ul style="list-style-type: none"> ● Protection of Groundwater; ● Direct Contact Soil Standards; ● Potential Human Health Risks; ● Ecological Effects of Concern; and ● Site-Specific Risk Assessment versus Generic Cleanup Standards.
5. Oct 21, 1992 Salt Lake City, Utah	19 States and 20 EPA officials	<ul style="list-style-type: none"> ● Groundwater remediation; ● Future land use; ● Mechanisms to promote effective State/EPA partnerships; ● The EPA Regional perspective; and ● State cost sharing.
6. Dec 3-4, 1992 Washington, DC		<ul style="list-style-type: none"> ● Future Land Use Considerations in Superfund Remedy Selection; ● Voluntary Cleanup Programs; ● Groundwater Remediation Time Frames; ● Measuring and Communicating Success; and ● State non-NPL Cleanup Initiatives.
7. June 24-25, 1993		<p>This technical meeting was convened to discuss issues associated with exposure to soil contaminants via direct contact and leaching to groundwater.</p>

States welcome the opportunity to share information with EPA. Through EPA/State interaction, States can alert EPA to concerns they may have with particular program management approaches.

The role that States have played in the Superfund response process has evolved over time; their role in site cleanups has increased as the Superfund program has developed. States and EPA have found that the hazardous waste cleanup universe is bigger than originally anticipated. Many States have developed site cleanup programs that complement the Federal Superfund program. Some States are developing their own funding schemes, liability approaches, and standards. At this juncture, involving the States in managing Superfund is most important to ensure national consistency.

4.2 COMMUNICATION WITH THE PUBLIC

EPA has held several meetings to solicit input from the public on how the Agency might improve the Superfund response process and communication with the public. The first of these meetings, held in June 1992, was in Washington, DC. Other meetings have been held in Chicago, San Francisco, and Dallas. The purpose of the public forums is to provide an opportunity for people with different perspectives to express their views. No effort is made to develop consensus or to prioritize concerns or solutions suggested during the meetings. However, after each meeting, EPA has developed a set of follow-up actions on major suggestions made by meeting participants.

Superfund Revitalization Public Forum

To solicit suggestions on how to accelerate the Superfund response process, EPA held a public meeting on June 24, 1992, in Washington, DC. More than 150 people attended the meeting, representing industry, State and local governments, communities, environmental groups, and other constituencies. Clean Sites, Inc., under a cooperative agreement with EPA, facilitated the meeting. In addition to receiving general suggestions on how to expedite the Superfund cleanup process, three specific topics were targeted for discussion in breakout sessions. These topics were:

- Ways to encourage and manage voluntary cleanups by potentially responsible parties (PRPs);
- Effective ways to involve the States, the community, and other interested parties in the cleanup process; and
- Ways to describe the expectations of the Superfund program, measure success in achieving program goals, and communicate the goals and successes to interested parties.

Each breakout session included a panel comprised of senior EPA Headquarters and Regional officials in key decision making roles with respect to the Superfund Program. Breakout session participants were invited to present their views on the stated topics, and the EPA panelists were given an opportunity to address the ideas presented.

The meeting afforded members of the public a forum to convey to EPA their concerns and recommendations and also an opportunity to develop a better understanding of the Agency's position and the challenges it faces relative to the Superfund program/process. The meeting was beneficial in identifying the myriad issues of concern to parties directly affected by the Superfund process. The interaction between EPA and the meeting participants during the breakout sessions also served to initiate dialogue on the issues.

EPA/ICMA Regional Conferences

Following the June Public meeting in Washington, EPA immediately began efforts to convene four additional meetings in 1992-1993 in association with EPA Regional Offices and the International City/County Management Association (ICMA) through a cooperative agreement with EPA. EPA and the ICMA convened a regional conference in Chicago on November 12-13, 1992, to solicit suggestions from different constituencies on how to improve the current Superfund program.

A total of 80 people participated in the meeting. Participants represented the private sector, local government, citizen and environmental groups, State agencies, EPA Headquarters, and EPA Region 5. Speakers were selected to provide several different perspectives to open the meeting. These included senior EPA Headquarters and Regional personnel, as well as individuals representing different interest groups .

Attendees were divided into four smaller groups for the breakout sessions which focused on three primary topics:

- Voluntary Cleanups;
- Accelerated Cleanups; and
- Public Involvement.

A second EPA/ICMA Superfund Revitalization Forum was convened on February 1-2, 1993, in San Francisco, California. A total of 84 people attended, representing the private sector, local government, citizen and environmental groups, State agencies, and EPA. The meeting structure and general topics for breakout sessions were the same as the Chicago meeting. Interest group perspectives were provided by speakers representing city government, community groups, and private industry.

A day and a half public forum was convened in Dallas, Texas on May 19-20, 1993. Although structured along the lines of the previous meetings, this forum focused on different topics. Breakout sessions addressed issues pertaining to environmental equity. Session #1 was entitled "Economic Considerations at Superfund Sites" and included discussions on employment opportunities and training local labor, redevelopment at Superfund sites, and property value impacts of Superfund sites. Session #2, "Public Involvement: Addressing Social Concerns of Superfund Sites," included discussions on outreach to low-income communities and minorities at Superfund sites; environmental equity; risk issues; enhanced public involvement; and Superfund Technical Assistance Grants. Session #3, "Innovative Technologies," included discussions on criteria for evaluating innovative technologies, additional assurances needed, information on innovative technologies, and incentives for the development and use of innovative technologies. About 80 people participated in the Dallas meeting.

Benefits of Public Communication

The meetings with the stakeholders have provided a mechanism for EPA outreach to the community concerning Superfund. The meetings have provided an opportunity for diverse stakeholders to express their opinions. By participating in the discussions, public participants gain an understanding of the complexities of the issues facing the Superfund program. The meetings afford EPA an opportunity to gain a better appreciation for the concerns and motivations of the public on Superfund issues.

The meetings, in particular the breakout sessions, provide an opportunity for open communication. These sessions let participants know that EPA is sincerely interested in their viewpoints.

One industry participant at the Chicago meeting noted the EPA Headquarters and Regional Office attention to the meeting. He was impressed by the EPA effort to encourage communications and to listen. He suggested the greatest benefit from these meetings is the opportunity for policy makers to meet with a cross-section of people involved with sites (ranging from city administrators to PRPs) to get a "reality check" about concern and problems in the field. It is important that EPA policy makers hear from people with heart-felt opinions on Superfund issues. Meetings such as the Chicago forum facilitate this communication.

A participant in the San Francisco meeting also stated that he thought such meetings are beneficial. He observed a level of responsiveness on the part of EPA that he had not seen before and remains convinced of EPA's sincerity in trying to revitalize the Superfund process and to use community input constructively.

4.3 COMPENDIUM OF GOOD IDEAS

Because the Superfund program is implemented primarily in the EPA Regions, the program has evolved with some differences in each Region. As may be expected, different Regions have been able to perform certain functions better than others. To learn from those programs that have been particularly successful in certain areas, a compendium of model programs has been developed that summarizes aspects of each Region's success stories. These success stories were summarized in the "Compendium of Good Ideas, Models of Success and Lessons Learned," March 1993, EPA Publication 9202.1-10-1.

The Compendium summarizes innovative ways to improve Superfund implementation. The Compendium is a two-volume publication, with 19 ideas discussed in some detail in Volume 1 and approximately 250 ideas described briefly in Volume 2.

Many of the suggestions identified in the Compendium are already being implemented or explored in other Regions throughout the nation. There has been some exchange among Regions for at least 14 of the 19 ideas presented in the Volume 1 Compendium of Good Ideas.

4.4 COMMUNICATIONS WITH THE PRIVATE SECTOR

Superfund Ambassador Program

An undeniable effect of the Superfund program has been to stimulate corporate America to deal directly with hazardous waste cleanup. Several major firms across the country have either created their own cleanup programs or hired cleanup companies to handle hazardous waste cleanup. Major corporations such as Dow Chemical have cleanup operations employing over 300 people, greater than some of EPA's Superfund Regional offices. These people deal with cleanups under Superfund, RCRA, and other Federal, State and local law.

To improve communications with private companies, EPA has piloted the Ambassador Program (models of success, good ideas, and lessons learned), which is similar to the one used to develop the Compendium of Good Ideas. A focus group approach is being used in which a few EPA people meet with several people from a particular company. The focus group sessions provide an opportunity for EPA staff to meet with their private counterparts in a non-confrontational setting to understand better the ideas and interests of the "other side." Private companies are being encouraged to discuss successes, innovations, lessons learned, and concerns with Superfund and other hazardous waste issues off-the-record.

EPA staff visited Dow Chemical Company in Midland, Michigan, on April 26, 1993, and Geraghty and Miller, Inc., in Chicago, Illinois, on May 10, 1993, as a pilot for

this program. Specific issues discussed at the meeting include site investigation; site management; effective practices; liability issues; communication activities; and EPA, State, and PRP interaction.

Dow has 10 sites with major Superfund involvement. Recommendations raised in meetings with Dow staff include shifting responsibility for community relations to the PRP who often have a local presence; not using residential land use as a default for risk assessments; and using a proactive approach in dealing with hazardous materials.

Geraghty and Miller is a consulting firm that has been involved in approximately 150 Superfund sites, primarily for private companies. Some of the suggestions that were raised in the meeting with Geraghty and Miller staff include increasing Superfund program flexibility; formation of a mentoring program for training of EPA Remedial Project Managers in both technical and interpersonal skills; reducing the number of deliverables; streamlining data requirements; adopting a performance based process for remedy selection; and increasing the informal interaction between PRPs and government agencies.

PRP Incentives Forum

In mid-April 1993, a two-day meeting was convened in Denver, Colorado, to discuss how to create incentives for PRPs to work more cooperatively with EPA. The objectives of the Forum was to promote better interaction, identify obstacles, and develop recommendations from the private sector that could facilitate faster cleanups. This meeting was called the PRPs Incentives Forum. Participation in the forum was by invitation. The 30 people attending were primarily industry representatives. Case studies discussed at the meeting were volunteered by the participating PRPs.

CHAPTER 5

IMPROVING ARCS CONTRACT MANAGEMENT

In the past two years, EPA has made significant strides in improving the contract management of its Alternative Remedial Contracting Strategy (ARCS) contracts. In 1991, EPA faced major criticism by Congress and the press for mismanagement of the ARCS contracts, in particular the high program management costs, and EPA's administration of oversight control. In response, EPA's Administrator Reilly immediately established an Agency Task Force to evaluate the allegations and recommend actions to correct any weaknesses in EPA's management of these contracts. The Task Force made thirty-two recommendations for improvements in its 1991 report, "Implementation of the Superfund ARCS". To date, EPA has succeeded in implementing the majority of these recommendations.

The recommendations made by the Task Force incorporate across-the-board improvements to strengthen contract management in ARCS and the Superfund program as a whole. They included: strengthening monitoring of contractor costs and performance; streamlining the Award Fee process; and improving oversight and instituting greater accountability for contract management throughout the program. Since 1991, EPA staff have worked diligently on implementing these improvements in all ARCS contracts. The improvements have led to cost savings through reduced charges for contract administration and increased scrutiny of contractor costs.

Many of the recommendations have also had a significant impact on improving contract management in other Superfund contracts. In addition, they have led to tighter controls in the next generation of EPA's clean-up contracts being placed under the Long Term Contracting Strategy. These changes, such as requirements for more detailed independent government cost estimates, enable EPA to manage the expenditure of contract dollars better. Following the ARCS Task Force report, the EPA's Administrator commissioned a review of procurement and contracts management at EPA. The contracts improvements by the "Standing Committee on Contracts Management", as the task force was called, are in the process of being implemented and thus are beyond the scope of this report.

This chapter describes the ARCS management successes EPA has had in four key areas. They are:

- Reduction in Program Management Costs;
- Streamlining the Award Fee Process;
- Strengthening ARCS Contract Controls; and
- Increased Oversight and Senior Management Accountability.

5.1 REDUCTION IN PROGRAM MANAGEMENT COSTS

During the past two years, EPA has succeeded in reducing its ARCS contractor program management costs from 20% of total contract costs to 12%. EPA has also taken action to restructure the program management cost category by breaking it down into administrative and technical support costs. This allows the agency to monitor costs more closely and better document contractor costs. In addition, EPA now evaluates contractors' control of program management costs in determining contractors' performance award fee.

Under the Superfund program, EPA must account for all cleanup costs related to a site in order to successfully recover costs from responsible parties. The ARCS contracts have two accounts where cleanup costs are charged. Site-specific costs are charged to the remedial planning account; non-site specific costs (e.g., administrative costs), and multi-site costs (e.g., equipment costs), are charged to program management. The amounts expended by contractors under program management during the first few years of the ARCS contracts were high compared to the remedial planning costs and total contract expenditures. EPA's successes in reducing program management expenditures and closer monitoring are described below.

Controlling Program Management Costs

The ARCS Task Force recommended improving cost control in the ARCS contracts to reduce administrative expenditures. The ARCS Task Force recommended a target ratio be set at 20% for program management costs against total contract expenditures. This target was subsequently lowered by Congress in appropriations language to 15% for fiscal year 1992, 12% for FY 1993 and 11% for FY 1994. EPA's actions to control costs resulted in EPA achieving the program management Congressional targets for FY 1992 (with an actual ratio of 13.9%) and FY 1993 (a ratio of 11.9% for the 9 months of available data). The implementation of targets brought program management costs down from an FY 1990 high of \$30.2M of a total \$106M in contract expenditures to a decreasing \$24.7M of a total \$166M in increased contract expenditures during FY 1992. The national target continues to decrease each year, encouraging contractors cleaning up sites to manage administrative costs wisely, or to shift costs previously charged to program management to more appropriate cost areas, especially site specific accounts.

In keeping with this later initiative, the ARCS task force also recommended restructuring the program management cost category to provide for more accurate tracking of costs. Due to the size of the ARCS contracts and the broad definition of program management activities, the costs accumulating into the program management category were substantial. As a result, EPA was vulnerable to misplaced costs being charged and paid for under program management, since invoices lacked sufficient detail for EPA to monitor and control costs effectively.

Refinements in Program Management Cost Tracking

In response to the Task Force recommendation to restructure the program management cost category, EPA developed and issued guidance on program management activities under ARCS that specified that program management costs should be segregated into administrative support and technical cleanup costs. Contractors have begun providing a summary level report of program management by cost element, and to invoice their program management administrative and technical cleanup costs separately. In addition to enabling the Agency to more efficiently monitor costs, the breakdown will also enable the Agency to better report the actual expenditures on hazardous waste site cleanups.

This program management restructuring effort has permitted the government to improve its ability to track administrative costs. Region 8 exemplifies how all of EPA's Regions have adopted the new program management restructuring. The project officer and contracting officer have established new approval procedures to control travel and equipment purchases. Travel and equipment purchases must now be reviewed and approved by the project officer before costs are incurred. Approved expenditures are then tracked and monitored carefully using the new program management structure.

Award Fee Changes

In addition to setting program management goals and restructuring administrative costs reporting, the Task Force recommended adopting contractor effectiveness in controlling costs as a factor in the award fee evaluation process. Historically, ARCS contractors were evaluated on task and management performance. Cost control was factored into task evaluations, but was not a stand alone criteria for program management. The establishment of program management cost goals, the ongoing efforts to reduce program management expenditures, and the addition of cost control as an evaluation criteria effectively augmented the Agency's cost control efforts. The Regional ARCS contract managers have used this evaluation criteria effectively. For example, in Region IV, contracting officers routinely provide the performance evaluation board with an analysis of program management costs and factors affecting the program management of individual contractors so that the ARCS contracts can be evaluated on their efforts in attaining the program management goals.

Future Contracts

The lessons learned in controlling administrative costs have been applied in the next generation of Superfund cleanup contracts. Program management as an accounting category has been replaced with individualized specific cost categories, (e.g., equipment, mobilization, and contract reporting). These specific categories result in contract managers having much better control in reviewing, tracking and minimizing administrative costs.

5.2 STREAMLINING THE AWARD FEE PROCESS

The ARCS contracts are cost-plus-award-fee type contracts. Under this type of contract, the fee, which can total up to 10% of the contract value, is comprised of a base fee portion and an award fee portion. The base fee does not vary with the quality of performance. It compensates the contractor for risk and allows for costs incurred but not accommodated under standard government contracts, such as financing costs. To provide added incentive fee pool is available whenever the contractor achieves high-quality performance. The award fee is dependent on EPA's evaluation of the contractor's performance.

A formal performance evaluation procedure is the backbone of the incentive concept. The ratings given during the evaluation process are used in determining the amount of fee given a contractor. Contractor performance is also considered when allocating new work among several contractors. The evaluation requires EPA work assignment managers and contractor project managers to write reviews, document performance and determine ratings for specific categories of work. The ratings are then evaluated by an EPA Performance Evaluation Board. The board reviews and critiques the evaluations prepared for each work assignment and agrees on the quality ratings for each contractor. The board's recommendations are then forwarded to an EPA Fee Determination Official, who assesses the soundness of the decisions, and makes the final determination on the amount of fee. Board recommendations may be overruled by the Fee Determination Official.

Although effective, the performance evaluation process for determining the award fee is labor intensive and time consuming. In order to streamline the process, the reviews for the ARCS contracts were adjusted from three to two times a year, but they still took an inordinate amount of effort to prepare, conduct and document.

The ARCS Task Force Report recommended an evaluation of the Award Fee system to determine if it could be further streamlined, with particular attention to the paperwork burden and the issue of national consistency. A group of EPA staff who manage the ARCS contracts identified several adjustments that improve the existing system. Their recommendations were summarized in an EPA Directive, issued in September 1992, that outlines the steps to streamline the award fee process and reduce the overall cost to the Agency. The improvements are discussed in the following sections.

ARCS Contractors' Self-Evaluations Are Now Limited to Highlights of Performance

As part of an objective award fee process, contractors are allowed to submit a self-evaluation for inclusion in the performance evaluation package that is submitted to the EPA Performance Evaluation Board. Over the years, these "contractor self-

evaluations" had become lengthy and quite detailed. Since EPA pays for the contractor to perform its self-evaluation, it is in the Agency's interest to limit the contractor's evaluation to the minimum length and detail necessary. In addition, it is time consuming for the performance evaluation board to review lengthy contractor evaluations.

Nationally, ARCS contractors' self-evaluations were limited to a maximum of ten pages. Exceptions were limited to cases where performance problems were evident, in which case, the contractor could include their views and corrective actions as an appendix. In addition, contractors were required to refocus their self-evaluations to include a section on program management and other critical areas established by each EPA regional office.

By limiting the length of contractor self-evaluations, the direct contractor costs associated with performance evaluation were reduced. In addition, the regional workload was reduced as a result of more concise contractor reporting. A final direct benefit is that contractor reports now include an evaluation of program management which helps the EPA regions control non-site costs.

EPA Establishes Thresholds for Evaluation of ARCS Work Assignments

Under the original award fee process established for ARCS contracts, performance was typically evaluated for every work assignment worked on during the period being evaluated. This could include anything from four hours of effort to 4,000 hours of effort. Since individual reviews and ratings were prepared for each work assignment, an inordinate amount of time and energy was being expended on evaluating small amounts of work.

The EPA Regions were directed to establish hour thresholds under which work assignments would no longer be individually evaluated, (e.g., 100 hours), unless there was unsatisfactory performance. Therefore, the contractor's award for these hours is based on satisfactory performance and work assignments below the threshold are only evaluated if warranted by unsatisfactory performance.

This policy helps focus Superfund's performance evaluation efforts on high cost, high impact work assignments while at the same time reducing paperwork and costs.

EPA to Increase Performance Incentives in New Generation of Remedial Contracts

EPA is currently placing the Remedial Action Contracts (RACs), which will replace the existing ARCS contracts. The award fee plan for these contracts will include greater performance incentives and fewer administrative requirements. The increased performance incentive is achieved by limiting the availability of award fee to performance that exceeds EPA's expectations. The administrative burden is also reduced

by eliminating distribution of provisional award fee. Superfund will incorporate the award fee process improvements into all new contracts under the Superfund LTCS.

5.3 STRENGTHENING ARCS CONTRACT CONTROLS

EPA contracts, in particular the ARCS contracts, have been under scrutiny by Congress for EPA's lack of adequate contract controls. In an effort to address its vulnerabilities, the EPA Superfund program has taken action to ensure proper controls are in place to efficiently monitor contracts and safeguard the government against waste, fraud, and abuse.

Under ARCS, which are cost-reimbursement type contracts, diligent contract monitoring is important because the primary cost risk rests with the Agency and not the contractor. In an effort to lower these risks, EPA contract managers perform frequent financial monitoring. EPA contract managers use an array of contract controls to ensure good contracts management. These methods include: developing independent government cost estimates prior to issuing work, scrutinizing monthly contractor invoices during work assignments, and implementing guidance on techniques to monitor costs.

Independent Government Cost Estimate

EPA has received criticism over the years that contractors have a hold over the Superfund program, not only by the high percentage of work contracted out but also because they establish the cost of the work. Criticism stemmed from EPA's over-reliance on contractors' recommendations regarding the cost to perform work at hazardous waste sites. Prior to the directive requiring Independent Government Costs Estimates (IGCEs), EPA work assignment managers used their best judgement in evaluating a contractor's cost proposal for a task. The Agency now requires the development of an Independent Government Cost Estimate for every new work assignment or work assignment modification expected to exceed \$25,000. The IGCE is used by the EPA contract manager as a tool in negotiating the workplan budget with the contractor and for documenting the resulting agreements in the contract file. The IGCE provides enough detail to allow EPA contract managers to determine whether the approach and costs are realistic and reasonable. Therefore, the IGCE is a good measure to assess the validity of the contractor's proposal.

The EPA contract manager holds considerable negotiation leverage when realistic IGCEs are developed prior to contractor work plan negotiations. The exercise of developing IGCEs also demonstrates to EPA contractors that the government negotiation team is fully prepared to question contractor assumptions and negotiate realistic costs for the work to be performed.

Invoice Review

EPA has also received criticism on its procedures for reviewing invoices. The problem was due in part to unclear roles and responsibilities of the EPA contract managers regarding invoice reviews. EPA has since implemented changes in contractor invoice reviews, instituting clear accountability and responsibility of contract managers regarding the invoice review process.

Work assignment managers are being offered refresher training on how to review their contract invoices carefully, how to question charges properly and to suspend/disallow payments. EPA work assignment managers are now required to provide written certifications or recommendations concerning cost reasonableness to the EPA project officer. This has resulted in a better system of internal control within EPA Regional offices. Also, there is a greater assurance that all costs billed by contractors are being thoroughly reviewed by EPA personnel prior to payment, and any inappropriate costs are being questioned and may be disallowed.

In an effort to assure continuous improvement, a Quality Action Team (QAT) was recently established within EPA to review in detail the invoice review and payment process. This QAT will 1) identify any data gaps, for financial oversight purposes, in vouchers and monthly reports submitted by contractors, 2) identify any inefficiencies or areas of vulnerability in the current voucher review process, and 3) make recommendations for development of new contract requirements, if appropriate, to ensure that invoice and monthly progress reports contain adequate information for EPA staff to assess reasonableness of charges. A report from this team, along with recommendations for change if appropriate, is expected in June of 1994.

Remedial Cost Management Manual

In another effort to control costs and improve contract management, EPA is developing the Remedial Cost Management Manual. This document presents a universal set of cost management practices and procedures for EPA personnel who have the responsibility for managing work assignments under Superfund contracts. The manual includes procedures for developing independent government cost estimates, scoping, reviewing project costs, budgeting, and managing schedules. When completed, the manual will serve as a handy reference guide for work assignment managers to use in monitoring and controlling work assignment costs.

Regional Reviews

In an effort to monitor the Regions' progress in implementing the ARCS study recommendations, a Headquarters review team was established to conduct a series of Regional reviews. The purpose of the reviews is to determine whether the Regions are effectively implementing the recommendations contained in the ARCS Task Force

report, and to determine if other issues or factors may be acting as barriers to good contracts management. The team is responsible for assessing first hand the contract management practices in each EPA Region. These reviews provide valuable insight into Regional activities and issues, and help assure that ARCS Task Force recommendations are being implemented.

The review team makes recommendations to the Regions in the areas of program management, ARCS Task Force contract controls, ARCS contractor audits and reviews, award fee process, and EPA's management processes and organization. The Regions heed the recommendations of the review team. For example, the reviews have resulted in more active Regional Management Teams in most of the Regions visited, thereby assuring high-level management attention to contracts management issues. The information obtained during these reviews also assists EPA in better responding to Congressional concerns and inquiries.

5.4 INSTITUTION OF SENIOR MANAGEMENT ACCOUNTABILITY AND OVERSIGHT

The EPA administered Superfund contracts represent the largest system of contracts within EPA and are among the largest in the civilian portion of the Federal Government. Although contracting is a key component of the Superfund program, management of contracts has historically been fragmented among EPA offices. There was no central link between the program's mission and the acquisition process. It is important for EPA to ensure that Superfund contracts and the acquisition of services are best utilized and managed to meet the Superfund mission.

Given the reliance of the Superfund program on the services of outside parties, the management of the acquisition of those services is of unique importance. In order to manage the process, EPA created the position of an Acquisition Program Manager, who reports directly to the Assistant Administrator responsible for overseeing Superfund acquisition decisions and activities.

ARCS Council

In addition to designating a single point of contact for Superfund Acquisitions in the Superfund program, the Task Force also recommended the formation of an ARCS Council, consisting of Headquarters and Regional personnel, to identify issues and improve ARCS contract management on a continuous basis. The ARCS Council includes management officials from both the Regions and Headquarters to assure the integration of technical program considerations and contracts management issues and to provide continuing top-level management ownership of and involvement in the contracts management process.

Regional Management Teams

Contributing to the ARCS Council are the ideas and recommendations of the Regional Management Teams. The Regional Management Teams were established to bring together contracting officers, technical staff and supervisors in the management of the ARCS contracts in each Region.

The ARCS Council, Regional Management Teams and the Acquisition Program Manager together form the infrastructure for coordinating and communicating across Regions about issues and vulnerabilities in contracts management. This communication is critical to successful contracting in EPA, particularly in the Superfund program where contracts are being decentralized. Through the ARCS Council, the Regional Management Teams are tasked with evaluating the management of their contracts and reporting to the council on their findings.

Although many of the issues the Regional Management Teams have been addressing are the recommendations of the ARCS Task Force, the teams have also been proactive in identifying areas of improvement within their own Regions. For example, under the direction of the Regional Management Teams, most Regions have conducted contract "vulnerability assessments." Invoice review was identified by several Regions as a vulnerable area. Many Regions have developed contract specific training, offered informally through such efforts as brown-bag lunches or seminars, to educate and improve work assignment managers' skills in invoice review. Work assignment managers have highlighted these seminars as extremely useful in improving their effectiveness in managing contracts.

Senior Regional Management Acquisition Council

The deliberations of the Regional Management Teams and the ARCS Council has resulted in the successful implementation of the ARCS Task Force report recommendations, and facilitated in sharing performance information across the Regions. Recently, in a move to consolidate Superfund contract management initiatives, the ARCS Council was merged with the group working on implementing Superfund's Long-Term Contracting Strategy. It has been renamed the Senior Regional Management Acquisition Council.

As a result of the efforts of many dedicated work assignment managers, contract managers and supervisors over the past two years, EPA has established the foundation for proper management of the ARCS contracts, and a good baseline of proper contract management for future Superfund procurements.